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THE GEOGRAPHIC PROSPECT

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PREFACE

The substance of this essay formed the address of the retiring President of the Association of American Geographers, delivered before the Twenty-fifth Anniversary Meeting of the Association in New York City, December 28, 1928. The author cannot do better, in presenting the complete discussion for the friendly criticism of his geographical colleagues, than to repeat in the form of a preface the introductory paragraphs of that address, since these will serve most effectively to orient the reader.

"In determining the subject upon which I should address you tonight I was guided in part by the expectation that on this occasion we should have from others a survey of the remarkable progress made by geography during the last quarter century. This expectation has in part been fulfilled in the excellent summary presented by our Secretary, covering the activities of this Association since its birth. But we had envisaged reports of progress in other quarters; and the bright side of our shield being thus ably provided for, I thought it only salutary that I should array myself in sombre robes and study with you the side which rests in shadow.

"Unfortunately, the favorable side of our shield cannot, for sufficient reasons, be presented as fully as we had planned. I shall not wholly neglect it in my own remarks; but if you find in what follows an emphasis upon our difficulties which gives, in the absence of full consideration of our advantages, an unbalanced picture of the present situation in geography, I beg you to remember that I am avowedly directing your attention to but one aspect of a larger whole.

"It has seemed to me that the end of a quarter century in the history of an organization founded by professional men for promoting 'the scientific study of geography' is a fitting occasion upon which to take account of stock. Let us devote this hour to analyzing our present position, in order better to estimate the direction in which we should advance during the twenty-five years to come. In what I say I shall not attempt the perilous task of defining geography. Our honored chairman of the evening on a previous occasion refused to essay the task; and far be it from me to rush in where his more experienced foot has paused in fear. Professor

Michotte¹ of the University of Louvain recently assembled a bibliography of papers dealing with the definition of geography, most of which had appeared within the space of twenty years. He tells us that this list, although very incomplete, contained more than fifteen titles! Let these suffice. I have simply wished to consider the present status of our science in order to discover whether geography, as each school understands the term, has gained for itself a standing which is at least reasonably satisfactory to those most concerned in the development of the subject.

"Before this audience I shall not presume to discuss in detail conditions in our own country. Most of you have for years been doing this in greater or less measure on your own account, and in our literature there are a number of papers dealing with different phases of the subject. We have some difficulties peculiar to the evolution of geography in America; but I shall hope to convince you that general causes affect our science far more profoundly than do local ones. The experiences and opinions of our colleagues in foreign lands thus have real value for us. Accordingly, I have thought it would help us to view our own difficulties and problems more objectively and with a broader background if I were to analyze with some care the geographical situation in a few countries of western Europe, giving special attention to those highly variable conditions within the universities which have profoundly affected the growth of our subject. This last has seemed to me necessary, because the universities, rather than geographical societies or other institutions, have led the way in creating modern geography.

"I shall devote particular attention to conditions in France, with briefer references to Great Britain, Germany, and Belgium. To verify impressions gained from studies of the literature and thus to acquire a more accurate estimate of the present status of geography in these countries, I have personally discussed the matter at much length with many of our European colleagues. As a further check upon conclusions presented here I have recently secured from some forty of them, nearly all heads of university departments of geography, fairly full statements concerning the standing of geography in their respective countries, the difficulties besetting its progress, the causes of these difficulties, and the best means of removing them. While full responsibility must rest with

¹ P. Michotte, *L'Orientation Nouvelle en Géographie*, Extrait du Bulletin de la Société Royale Belge de Géographie, No. 1, 39 pp., Brussels, 1922.

me for both the substance and form of conclusions expressed in the pages which follow, except where others are specifically quoted, it is only just to acknowledge my debt of gratitude to those whose generous aid placed at my disposal a mass of pertinent facts and expert opinions upon which I have drawn extensively in formulating my discussion. While the nature of the discussion makes it preferable not to cite the authors of many opinions upon which I have relied, the reader will not be left in doubt as to the extent of my indebtedness to others. Indeed, were these pages to reflect merely the personal opinions of one individual, they could make little claim to attention. It is precisely because they rest in no small measure upon the considered judgments of many whose competence to pass on the various problems of geography cannot be questioned, that I venture to submit them to your thoughtful consideration."

PART I. CONDITIONS

I. GEOGRAPHY IN FRANCE

In directing attention to the situation of geography in France I shall present the subject somewhat more fully than in the case of other countries. This I do partly because I have had larger opportunities for observation there, but also because the splendid achievements of our French geographical colleagues make it especially desirable that we should fully appreciate some of the difficulties which they have overcome in accomplishing all that they have done for our science. I pass at once to the consideration of geography as a subject of advanced instruction and research in the universities.

THE FRENCH UNIVERSITY SYSTEM.—No one can comprehend the position of geography in the French universities who does not keep clearly in mind three fundamental facts. The first of these is that the several faculties which constitute the modern French university were until comparatively recent times as independent as are separate universities in America. Napoleon, fearful of the power of the intellectual centers, saw to it that their strength was divided by the creation of separate faculties, each leading an isolated existence and responsible directly to the State. The union of several faculties into a single university is a modern achievement; and as the power of tradition is strong in France, the division between the faculties is still much sharper than in America.

It is not merely that physical walls or broad spaces may visibly separate the faculties one from the other. The fact that the Faculty of Letters and the Faculty of Sciences are, for example, frequently in widely distant parts of a given city, and that the faculties of the same university may even be located in different cities, is the visible sign of invisible barriers between faculties which still exist in France to a degree practically unknown in America. Incidentally it may be observed that the French term *faculté* in common usage is applied, not only to a body of professors, but also to the building or buildings in which a specific group of students is instructed in a definitely organized body of learning. A photograph of the "Faculté des Sciences" may thus be a photograph of a building, as well as a photograph of men.

The second fundamental fact which we must keep clearly before us is that in the French educational system geography grew up as a handmaiden, and be it said a very lowly handmaiden, to history. As in America, so in France, the geography of yesterday was chiefly a matter of locating and describing places and peoples, and as such was considered most valuable as an adjunct to historical studies. Consequently geography found its development in the Faculty of Letters; and in the Faculty of Letters it remains, still closely associated with and subordinated to history.

As the third element of our problem, note the fact that the greatest advance made by French geography in modern times has been on the scientific side of the subject. The great change came when a man of rare vision, Vidal de La Blache, saw that the new geography must be the scientific study of life and its environment. For such a study the equipment offered by the historian could not suffice. There was necessary a new training and a new point of view. The disciples of the new school must have a broad knowledge of the forces operating on the earth's surface and affecting the form of the lands, the conditions of the atmosphere, and the behavior of the oceans. A scientific viewpoint, a scientific equipment, and scientific methods of work were now necessary. The creator of the new school realized keenly his own deficiencies in these respects, born of a purely historical training, and set about to remedy them. He urged his pupils to cross the barrier into the Faculty of Sciences, there to gain a better preparation for modern geographical researches than it had been his own fortune to acquire. These disciples are today the professors of geography in the French universities, and form the vital nucleus of the modern French "school of geography," the outstanding product of which

is the admirable series of regional monographs presenting scientific studies of man's environment and his complex reactions to its varied influences.

SEPARATION OF GEOGRAPHY FROM THE OTHER EARTH SCIENCES.—With the three foregoing facts clearly before us, we are in a position to understand the peculiar place of geography in the French universities. We see, in effect, a scientific subject developing in the nonscientific environment of the Faculty of Letters, held by force of tradition to close association with history, to which it is in no small measure subordinated as will later appear, and equally by tradition separated from the other earth sciences by visible and invisible walls which may be surmounted only with the greatest difficulty. It is not only general geography, regional geography, and human geography that occupy this situation. Physical geography, or physiography, finds itself (with rare and partial exceptions later to be noted) in the company of history, and more or less effectively separated from the earth sciences of which it is a part.

How effective is the separation of geography from geology in France, and how close its association with history can best be illustrated if I may be pardoned a personal reference. When a few years ago the writer was designated as exchange professor to France, the French authorities took steps to have him accredited to both the Faculty of Sciences and the Faculty of Letters of each university visited, notwithstanding the fact that he came as the representative of a *scientific* exchange to lecture on the evolution of landforms. Thus the place of geomorphology in the Faculty of Letters was at once in evidence. In some of the universities the visitor's relations with the Faculty of Sciences were purely formal; his lectures were all given under the auspices of the Faculty of Letters, and his geographical colleagues sometimes found it difficult to understand why a geomorphologist should even go through the formality of calling on the dean of the Faculty of Sciences.

Where the visitor's work was divided between the two faculties, as was more usual, the peculiar position of geomorphology in France was still clearly apparent. Practical exercises in map interpretation, in which the students were required to determine geological structure from a study of surface contours, were nearly always conducted under the auspices of the Faculty of Letters, and more than once with the professor of history as an interested observer. In several universities geographical field excursions were organized in which no geologist participated, although rock com-

position, geologic structures, and physiographic evolution were fully discussed. On the other hand, one or more professors of history sometimes accompanied the party. In one of the larger universities where the professor of geology does give a course of lectures on physical geography, he leaves his own laboratory in the *Faculté des Lettres*, and delivers the lectures in the traditional atmosphere of this latter faculty.

On the social side of French university life one may remark abundant evidence of the wall which separates geography from geology. If one attends a tea or other function offered by the professor of geography, he will ordinarily find there no members of the department of geology, although the professor of history, the professor of art, and other members of the Faculty of Letters will be present. If later the professor of geology be host, one may see his colleagues in physics, chemistry, and other sciences among the guests, with the geographers conspicuous by their absence. This will occur in universities where the geographers and geologists are the best of friends, and is no more remarkable in France than it would be in America if a geologist invited his geographical colleagues to meet a visiting geologist, but did not extend the invitation to professors of history. For the French geographer the professor of geology may be a personal friend but he moves in a different sphere, in another Faculty; whereas the professor of history, even if personally incompatible, is a close colleague, a member of his professional family. Of course, personal friendships and special circumstances do sometimes bring French geologists and geographers together at social functions. But I think it fair to say that in most French universities these are exceptional occasions rather than normal occurrences.

IMPORTANT DEVELOPMENT OF HUMAN AND REGIONAL GEOGRAPHY.—Let us, keeping before us this picture of the position of geography in the French university system, consider for a moment some consequences of the traditional linking of geography with history, and the corresponding divorce of geography from the other earth sciences. Most striking of all, perhaps, is the remarkable development in France of human geography. It is no mere accident that our French colleagues have far outstripped us in this aspect of the science. The French geographers have been first of all students of history, beginning their preparation by a definitely organized course of study ("History and Geography") in which

history claimed by far the larger part of their time. With later specialization in geography, the association with and interest in history has not been lost. The human side of geography has therefore appealed to them with a force unknown to the American geographer most frequently trained along geological and economic rather than along historical lines; and they have brought to their geographical researches a competence to deal with human problems not possessed by their American colleagues. Thus the outstanding achievement of the French school of geography is the production of a series of works on human geography, or on regional geography with strong emphasis on man's reaction to his environment, which justly entitles the French to a place of high honor in the history of geographical science.

UNITY OF THE FRENCH SCHOOL OF GEOGRAPHY.—Certain peculiar conditions have given to French geography a unity and driving force not observed in other countries. The French university system reflects the genius of this people for orderly and logical organization. It is difficult for Americans to comprehend the unity and simplicity of the whole French educational scheme, with effective control centered in Paris and each institution keeping step with it associates in measured progress toward a definite end.

When we consider the effect of this system upon courses of instruction we note first that each faculty in each university determines for itself the program leading to examinations for the "Certificats de Licence," and that the only program promulgated from Paris is that of the "Agrégation." But since the universities preparing for the "Agrégation in History and Geography" must have courses in conformity with the official program, it naturally comes about that in these universities the program for the certificats de Licence is shaped in conformity with that for the Agrégation. Thus there results a degree of unity and order in French geographic instruction unknown in America. It should not be understood from this statement that there is absolute identity of instruction in all universities. Some choice of subjects is provided by the official program; not all universities prepare for the "Agrégation in History and Geography"; and requirements of uniform preparation do not in any case directly affect the individual researches of advanced students. These facts give rise to a certain measure of diversity within the well-ordered French system. But I think any American passing from one French university to another will be most impressed by the degree of unity in geographic

instruction, which contrasts strangely with the much greater diversity to which we are accustomed.

Obviously system has its defects. I have heard more than one French colleague lament the necessity of taking time from his researches to "work up" a course of lectures on some region with which he was unacquainted, in order to pass on information, second hand, to his students. To a French professor invited to give lectures in the field of his researches at a Belgian university, a Belgian colleague said: "What a privilege your students have, to hear you discuss your specialty every week!" "My students," replied the Frenchman, "*never* hear me discuss my specialty. I lecture to them on certain subjects, about which I know little, assigned in the program of studies."

But system also has its advantages. The French professor of geography in time acquires a breadth of information which I fear few of us possess. And a system which prescribes three lectures a week as the normal teaching schedule of a professor leaves time for research which does much to offset some of the baleful effects of a partially standardized program of instruction. Most important of all, from the standpoint of our discussion, the French habit of order and unity in university work has undoubtedly contributed greatly to the success of the French school of geography. Vidal de La Blache found in it an admirable aid to the rapid propagation of his ideas. It seems to me extremely doubtful whether the same ideas developing in England with its varied and illogical university scheme, and nurtured in geographical departments of extremely diverse origins and aims, could have made the rapid progress or have preserved the degree of unity manifested in the orderly atmosphere of France.

RELATION OF GEOGRAPHY TO HISTORY.—In the union of geography with history in France the two subjects are most unequally yoked together, and history is by far the better half,—in fact two-thirds, three-fourths, or even more according to some of our French geographical colleagues. In one of the French universities a recent proposal to add a second man to the geographical staff provoked the surprised observation: "What! *Two* men in geography, when we have only *two* in history!" The complaint is common among our French colleagues that the time allotted to geography, in the joint program of "History and Geography," is wholly inadequate. In the examinations for which the program prepares the student, three-fourths of the ground cov-

ered, possibly more, relates to history. One can easily believe our French colleagues when they say that it is impossible to give their students a sufficiently broad and thorough geographical training under these conditions. It is difficult to see how the geographical side of the program can achieve a full and free development where the pressing demands of history for more and more time have to be considered.

SITUATION OF PHYSICAL GEOGRAPHY.—The difficulty becomes increasingly evident, in so far as the physical aspect of the subject is concerned, when we consider the consequences of the effective divorce of geography from the other earth sciences. There can, for example, be no sound work on the physiography of the lands without a broad and sure foundation in geology. The student of land physiography has to deal, among other things, with geologic structures and geologic processes; and for this he requires a fairly extended training in the principles of geology. But the professor of geography in the French university cannot take from the already inadequate time at his disposal a sufficient number of hours to impart such training. Even if the time were available, he lacks the necessary equipment. The geological laboratories and museums may be exceptionally rich in everything required for such a purpose, but they are practically closed to the geographical student. Sometimes they are in another part of the city, and thus physically difficult of access. But even when housed under the same roof, as occasionally happens, they belong to another *Faculté*; and the invisible wall formed by tradition and custom proves in practice a very effective barrier. Relatively few students scale the wall to browse in foreign pastures; and some who keenly felt the need of deeper geological knowledge told me that they were deterred from taking work in the department of geology by the fact that such crossing from one faculty to another was frowned upon by their professors.

To meet the situation resulting from the development of scientific geography within the Faculty of Letters, the French professors of geography have in some cases created within the Faculty small geologic or physiographic laboratories forming part of the "Institute of Geography." Here one finds cases containing sets of minerals and the more common rocks, geologic maps and cross-sections, and geologic models, as well as topographic maps of different countries, ordinary relief models, and other geographic apparatus. Funds are seldom available to duplicate on a large scale

the collections of rocks, maps, sections, and models already accumulated in the geological department in another faculty of the same university. As a result, the geographical student usually has access to a very inadequate laboratory equipment for the study of the earth sciences, and his training in this direction is necessarily less thorough than in American universities, especially since in the lycées or secondary schools he has had no preparatory scientific training. It is equally impossible, with limited funds, to duplicate for the geographical institute the large number of periodicals, reference works, government bulletins, monographs, and other treatises which are as necessary to the geographer as to the geologist. Consequently the working library of the French geographer is often inadequate to his needs. In the rare cases where both the geographical and geological equipment are reasonably adequate, one is impressed by the duplication of material and effort that necessarily results. At Paris this duplication is signalized in an unusual manner, because here is a striking exception to the rule that physical geography is given only under the Faculty of Letters. At the Sorbonne I found one professor of physical geography working with one group of students in the Faculty of Letters; and on the opposite side of the same building another professor of physical geography working with another group of students in the Faculty of Sciences: each professor with his own series of maps and models, his separate working library, and his particular supply of other necessary equipment.

The wall which separates geography from geology in the French universities is in some cases rendered the more unscalable by a lack of sympathy between geographer and geologist which is not difficult to comprehend. The French geographer has seen one of the greatest modern developments of his subject take place on its physical side, opening up an attractive field for a new understanding of the evolution of the earth's topographic features. He has observed that the geologists of France have failed to occupy this field to any great extent; that they have directed their energies to an elucidation of more remote earth history rather than to a systematic study of the earth's present surface forms. Or if he has seen the geologist enter this field, he has observed that it was often without an adequate understanding of the principles of modern physiography. Thus the French geographer has felt justified in pushing his researches upon a terrain where the geologist was not securing satisfactory results. The geologist, on the other hand, has looked askance at this history-trained individual from

the Faculty of Letters, invading a field where scientific methods alone must be employed, and where a knowledge of geologic structures and processes become necessary parts of one's working equipment. He has considered the geographer's training in geological principles to be superficial, and therefore has often placed scant confidence in his conclusions. Accordingly it is not surprising, that whereas in some instances this lack of sympathy has manifested itself only in good-natured bantering covering a mild disapproval, in others it has occasionally been sharpened by personal differences into a lack of cordiality which makes the wall between geography and geology all the more impassable. Where such is the case the geographical student interested in geomorphology finds it exceptionally difficult to secure that broad basis of geological knowledge without which he cannot hope to achieve a maximum measure of success in his chosen field.

Under the conditions described the development of the physical side of geography in France has not, it seems to me, kept pace with the remarkable development of regional and human geography in that country. I am not unmindful of the fact that a limited number of French geographers, especially the disciples of Vidal de La Blache, have crossed the barrier separating geography from the other earth sciences, and equipped themselves for the physical side of their investigations; that some of these have published physiographic studies of high excellence; and that one of them, first taking his Doctor of Letters in the *Faculté des Lettres*, then capturing his Doctor of Science in the *Faculté des Sciences*, has taken an assured place as an internationally known authority in physical geography. We are dealing now with average conditions and results, not with brilliant exceptions; and I am but repeating the opinion of many of my French colleagues when I say that the position of physical geography in the French universities is less satisfactory than is the position of human and regional geography. The establishment of an Institute of Geography in Paris where members of both the Faculty of Sciences and the Faculty of Letters interested in geographical studies are expected to meet on common ground, may point the way to a future solution of a difficult situation.

INFERIOR POSITION OF GEOGRAPHY IN FRANCE.—Even when we consider the standing of the science as a whole, and make full allowance for the remarkable advances of the French school in the human and regional aspects of the subject, we are forced to

conclude that in the country which has witnessed one of the greatest successes of our science, geography has not yet gained its full place in the sun. French geographers recognize that present conditions register a most gratifying improvement over those existing only a few decades ago; but at the same time they usually admit the fact that geography enjoys less prestige and encounters more prejudice than do the other sciences. One speaks of "the inferior position of geography among learned bodies and, in general, in the esteem of the public." Another writes: "The prestige is generally small." A third finds in learned circles and elsewhere a greater measure of esteem than his colleagues ordinarily report, but he nevertheless recognizes that among geologists, biologists, and others there exists "the impression, more or less explicit, that geography is a sort of minor study, scarcely a science," while "some look upon our field with a species of distrust." A fourth believes that a geographer specializing in a single branch of his subject, such as mathematical, physical, economic, or human geography, enjoys the same prestige as other scientists; but he adds: "Geographic instruction is in France often regarded as inferior by scientists, because the professors cannot have a profound knowledge of all branches of geography, and because students in the Facultés des Lettres have almost no scientific training." A fifth says emphatically: "It cannot be doubted that in France geography enjoys less prestige than the natural sciences." Only one says unequivocally that "geography in France has as much prestige in scientific circles as have botany and other natural sciences."

Various theories are advanced in explanation of the lower standing usually reported for geography, and to these we shall later turn our attention. Here let us merely emphasize the significance of the fact that in the country where geography has seen one of its most remarkable developments, geographers should so frequently complain of the inadequate recognition given the subject in university curricula, of the general refusal to recognize the subject as a science, and of the low esteem in which it is held by scientific men in other fields.

Some indication of the standing of a science in any given country is found in the recognition given it in the nation's highest academy of learned men. In the French Institute geography nominally has a place in the division of Geography and Navigation under the section of mathematical and physical sciences of the Académie des Sciences. This carries us back to the time when geography in France was largely a matter of geodetic and topographic surveying,

mathematical geography and cartography, and when the Académie des Sciences was an active center of work in these lines. The scientific quality of the work then being done was not open to question, and geography as then known was accorded its proper place in the national academy. Today French geography is primarily regional and descriptive, drawing its material from many fields of learning. This new geography is not recognized by the French Institute, for neither in the Académie des Sciences nor elsewhere does it find a place. A distinguished French geographer might be honored by election to the Académie des Inscriptions et Belles Lettres because of the literary quality of his work or its value in the field of the humanities; or to the Académie des Sciences Morales et Politiques as a historian or writer in some related field. But his subject will not be recognized as a science, nor will he himself be elected to the Académie des Sciences because of the scientific value of his studies. This fact is sometimes attributed to the ultra-conservatism of an institution which has remained unchanged from the time of Napoleon I, and which no minister of the French government would dare touch; but in the opinion of others it is due in part also to the fact that even in France geography has not yet conquered for itself a secure and high place among the sciences, such as would force recognition from the conservatives, either through modification of the Institute's constitution, or through election of distinguished geographers to the most nearly appropriate section.

II. GEOGRAPHY IN GREAT BRITAIN

If we direct our attention across the Channel to Great Britain, we note a striking contrast in the situation of geography as compared with that observed in France. Because the contrast seems in no small measure related to the very different environment in which British geography developed, it is desirable that we devote a few moments to brief examination of that environment.

THE BRITISH UNIVERSITY SYSTEM.—The growth of British universities exemplifies in peculiar degree the Anglo-Saxon genius, which conservatively bends and warps old institutions to meet new conditions. It is not for the Briton to destroy an ancient structure and remodel it on logical lines. Thus while colleges and faculties may be old in both Great Britain and France, the present *universities* of France are all young, while some of those across the Channel are venerable with time and tradition. And when one asks the professor at Oxford or Cambridge to explain the organization of

his University, he does not talk in terms of system, he talks in terms of time. He frankly admits that there is little system and less logic in the scheme of things about him, and points out that the present organization is understandable only in terms of its historical development.

It is not difficult to see that important educational advantages must attach to university growth unhampered by forced conformity to any standardized program, however logical. With various institutions originating at different periods and in different ways, and each free to work out its existence as the circumstances of its particular time and place may dictate, there are opportunities for testing new ideas and for experimenting in new methods which one does not find in a standardized system of instruction. The degree of individuality and diversity characteristic of the English universities appears truly remarkable when compared with French institutions, and is even a subject for comment by those familiar with our own variegated assortment of colleges and universities. There is little resemblance between Oxford and Cambridge on the one hand, and the more modern British universities on the other. The latter differ strongly among themselves, as do the separate colleges which compose the two institutions first mentioned. Indeed, the spirit of college individuality has long been so strong at Oxford and Cambridge as to relegate the conception of the University as a whole to a distinctly subordinate position. I am informed that at Cambridge, and the same may be true of Oxford, there is still real difficulty in getting instructors and administrators to think in terms of the University as a whole, and to place the interests of the University ahead of the interests of the individual college.

DIVERSITY IN ORIGIN AND AIMS OF BRITISH GEOGRAPHY.—Such is the picture of individuality and diversity which must be in our minds when we attempt any consideration of the development of geography in British universities. My own acquaintance with the geographical situation in Great Britain is far too slight to permit me to speak with authority of conditions there. Nevertheless, one does inevitably gather certain impressions from the published geographical product of a country, and these impressions I have checked in personal conference with some of our British colleagues. I have further profited from the wide knowledge of some ten or twelve of the leading geographers in England, Scotland, and Wales who have generously taken the trouble to write me more or less fully concerning the present status of our science

in their country. It has therefore seemed to me that it would not be inappropriate to place before the reader some generalizations the substantial accuracy of which appears to be guaranteed by a consensus of competent opinion.

Let me note first the apparent absence of any such unified national school of geographic thought as has given inspiration and direction to geographic efforts in France. As in America, so also in Great Britain, we find nothing quite comparable to the series of regional geographic monographs produced by the French school. In British universities geography has had neither the simplicity of origin nor the unity of purpose found in the French version of the subject. Instead of developing in association with history, British departments of geography have most frequently been the offspring of other departments. To quote a British colleague, "In most cases this was from economics, in two at least from biology (zoology), in two from geology. But there are three² in which geography began as an independent department." I am informed that in some English institutions geography is taught in connection with history; but in general the divorce from history is sufficiently pronounced to have been a subject of comment and criticism in the recent presidential address of Professor Myres³ before the Geographical Section of the British Association.

In view of the complex origins of British departments of geography it seems but natural that the place of geography in the British universities should be somewhat uncertain. We may find it included with the Arts, or with the Sciences, or with both. Equally understandable is an evident diversity of purpose, presumably traceable to diverse origins and associations, and to the fact that in some cases a specialist in the parent field became the head of the offspringing department of geography. It seems inevitable that the department head trained in economics should view geography differently from one trained in geology, who in turn would not see eye to eye with a colleague coming from the field of biology or history. Certainly geographers in Great Britain have looked and moved in different directions, with results that are giving no little concern to many of our British colleagues.

INFERIOR POSITION OF GEOGRAPHY IN GREAT BRITAIN.—With respect to the standing of geography as a science in Great Britain

² Another British geographer would place somewhat higher the number of departments originating independently.

³ John L. Myres, *Ancient Geography in Modern Education*, British Association for the Advancement of Science, Glasgow, 1928.

opinion appears to be substantially unanimous and strikingly emphatic. Of ten British geographers who expressed an opinion on this question all agreed that the prestige of geography in their country was low as compared with other sciences such as geology, botany, and zoology. The only variation was in the terms of the characterization: "lowest of all the natural sciences," "definitely inferior," "distinctly lower," "very little prestige." This inferiority of position is reflected in the fact that in the universities there are relatively few professorships of geography. Even heads of departments are seldom of professorial grade. This by no means indicates a situation so bad as would a similar state of affairs in America, since in British universities lectureships and readerships are equivalent to, and in some cases more advanced than, many of our professorships. It should further be remembered that failure to establish a professorship in a given university may be due to the impossibility of finding a man of professorial grade, and especially to lack of funds to pay the salary attached to such a grade, rather than to any lack of respect for geography as a subject for university instruction and research. Nevertheless, after making full allowance for these factors, which are of undoubted importance, there remains evidence to indicate that the failure to establish professorships of geography in the British universities is in part due to the general low prestige of the subject, and to limited esteem for the accomplishments of geographers.

There is marked unanimity in the opinion of our British colleagues to the effect that a distinguished geographer in Great Britain is not as likely to receive high distinctions as are men of the same abilities in other sciences. Geography has not yet gained for itself a recognized place in the Royal Society. Geographers who have attained distinction in related fields, as for example mathematics or astronomy, may attain the F.R.S., but not in the quality of geographers. Various explanations for this state of affairs have been offered by our British colleagues, such as "the natural tendency of members of an academy to elect new members from those following the same lines of work they themselves have pursued"; the fact that men are weighed mainly "on the basis of original observations and experiments, (whereas) interpretation and synthesis are not specially considered"; "the lack of recognition of geography as a definite subject"; the traditional policy of the Royal Society to stand especially "for the sciences which are both systematic (non-distributional) and non-human; above all for the experimental sciences"; "the infrequency of first rate orig-

inal work in geography." But whatever the causes assigned, there seems to be general agreement that even when consideration is limited to distinguished workers in geographical research, men in this field would have to be of such exceptional ability as to overcome a certain prejudice, due to the general low repute of their subject, before they could be elected to the Royal Society as geographers.

III. GEOGRAPHY IN GERMANY

THE GERMAN UNIVERSITY SYSTEM.—In Germany the development of modern scientific geography began earlier than in France or Great Britain. Several peculiarities of the German university system have been distinctly favorable to its growth. In the first place there exists a degree of order and centralization in the German educational system sufficient to give a measure of coordination in effort toward a desired end. On the other hand, the logical unity of the French program of instruction is not achieved, for the individual professors have enjoyed remarkable liberty in offering such courses as each desired. Most important of all, from the standpoint of its effect on the development of geography, the two faculties of letters and sciences have frequently been merged in a single faculty of philosophy. Here no invisible barrier has separated geography from the other earth sciences. A Belgian geographer⁴ studying the German system some years ago was moved to observe: "The entente between geography and neighboring sciences gives to German geographic instruction a remarkable solidity." A French geographer,⁵ although looking at the German situation from the French point of view, noted the fact that it was in those universities where the two faculties were separate, after the French manner, that geography was most retarded in its development.

IMPORTANT RÔLE OF PHYSICAL GEOGRAPHY.—The outstanding characteristic of geographic progress in Germany has been the rôle played by the physical side of the subject. Van Richthofen left the imprint of his remarkable personality at Bonn, at Leipzig and especially at Berlin; and by his compelling influence assured ample treatment of physical geography in other German univer-

⁴ Joseph Halkin, *L'Enseignement de la Géographie en Allemagne*, etc., Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, Fascicule IX, 171 pp., 1900. See p. 49.

⁵ Emmanuel de Martonne, *Note sur l'Enseignement de la géographie dans les Universités Allemandes*, *Revue Internationale de L'Enseignement Supérieur*, XXXV, 251-262, Paris, 1898. See p. 252.

sities. For him the domain of geography was first of all the surface of the earth itself, independently of what covers it and of what inhabits it; and this geography, he pointed out, must be based on a knowledge of geology. Geography in Germany has often been much closer to geology than to history. On the other hand von Richthofen and his followers carried geographic studies into realms beyond the physical, the master himself giving courses on commercial and regional geography, just as Ratzel at Leipzig and others specializing in political and historical geography, anthropogeography, commercial geography, and regional geography gave extended attention to mathematical geography, geomorphology, climatology, and oceanography. The structure of the German universities, especially the fusion of the two faculties of letters and sciences in some institutions and their close association in others was peculiarly suited to the growth of a type of geography in which both letters and the sciences were laid under heavy tribute. The German type of geography could scarcely have developed in the French university system with its traditional separation and marked isolation of the two faculties.

How far German geographers have sometimes carried emphasis on the physical aspects of their subject is a matter of common knowledge. For some of them the boundary between geography and geology has seemed to disappear, and one must not be surprised to find in German geographical treatises matter which might appropriately be classified under stratigraphy, paleontology, geophysics, and structural geology. The dynamics of faulting and folding, isostasy, and the movements of magmas in depth, have received attention in a geographical discussion by a German master of the science. In 1900 Professor Halkin of Liège pointed out that in certain of the German universities a course in general political geography was not given "because," he said, "some of the professors consider it as having only remote relations with geography proper, which for them is physical geography."⁹

DIVERSITY IN GERMAN GEOGRAPHY.—But while it is true that physical science has played a large rôle in the development of German geography, just as it has in America, it is equally true that the liberty of action enjoyed by German professors has resulted in a marked diversity of emphasis in their geographical departments. In the unified French educational system, where the University of

⁹ Joseph Halkin, *L'Enseignement de la Géographie en Allemagne*, etc., Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, Fascicule IX, p. 123, 1900.

Paris is the dominating center and all others are provincial institutions, it was only natural that there should develop a single school of geography, dominated by the one great figure of Vidal de La Blache. In the less centralized German system there arose what may well be called several schools of geography, and von Richthofen shared honors with other leading figures. One department has specialized particularly along physiographic lines, another in cartography, a third in anthropogeography, and so on. Along with these differences of orientation have arisen differences in methods and ideas, with the result that geography in Germany presents less semblance of unity than in France, although I think it shows distinctly more cohesion than in Great Britain. One is tempted to generalize, and to say that the degree of unity in geography varies directly with the extent of logical organization of the universities. Like most generalizations, this one contains elements of error; but I think he is wise who also sees in it some elements of truth.

POSITION OF GEOGRAPHY IN GERMANY.—That geography has conquered for itself a high place in Germany no one can doubt. Each university has one or more full professorships in the subject, and as Joerg¹ has observed: "It is in this matter of the number of its professional geographers . . . and the consequent large production of truly geographical literature, that Germany's strength [in the geographic field] lies." In the opinion of some, the ambition of pre-war Germany for colonial and commercial expansion gave to geographic studies the support of political interest. That the war heightened the prestige of geography in Great Britain and elsewhere cannot be doubted; and a German colleague cites, as evidence of the high reputation of the subject in his country, the fact that in spite of the post-war depression in Germany both universities and commercial schools have established or intend to establish new departments or programs in geography.

The remarkable genius of the German for painstaking analysis, accurate detailed description, and logical scientific deduction has contributed to geography a wealth of material of incalculable value. On the mathematical and physical side masters in cartography, geomorphology, climatology, and oceanography have arisen, making the whole world their debtors; while leaders in anthropogeography, historical geography, and other non-physical branches

¹ W. L. C. Joerg, *Recent Geographical Work in Europe*, *Geographical Review*, XII, 431-484, 1922. See p. 442.

have lighted the way into new fields of geographic thought. Undoubtedly the strong emphasis placed by German geographers on the physical aspects of their subject, and the acknowledged scientific character of such branches as geomorphology, climatology, and oceanography, have had great potency in gaining for German geography the favorable opinion of men in other fields of learning. An additional factor operating to the same end is the marked interest in scientific aspects of the subject manifested by most of the German geographical societies, especially those in which university men genuinely devoted to research exercise a measure of control. The *wanderlust* that springs strong in the German heart assures a wide popular respect for things geographical.

On the other hand, our German colleagues generally agree in the opinion that special difficulties and dangers beset their subject, and that the present position of geography in Germany has been conquered in the face of obstacles. "It must be admitted," writes one, "that the field of geography is over large, and hence the geographer cannot plough it everywhere to the same depth." Another emphasizes the necessity for thorough training "to avoid the danger of superficiality and consequent attacks from related sciences." A third similarly stresses the danger of the geographer's "nibbling all around" without becoming a recognized expert in any one phase of the subject, and of "expressing opinions on problems in which he is not competent." Yet another writes: "It is true that geographers are accused of superficiality by the specialized sciences sometimes not without reason"; but he adds that this reproach is now more and more rarely heard. This same authority agrees with other German geographers that during the last two decades of the century recently closed geography in Germany was held "in a measure of disrespect" by geologists and workers in other related fields, although he holds that this attitude is now largely a thing of the past. A fifth contributor to the discussions is somewhat less optimistic, and emphasizes the point that the elimination from geography of things not properly a part of it requires time. He believes this process of elimination is not yet completed, states that neighboring sciences do not fully realize the distinct point of view of the geographer in treating materials also studied by other scientists, and adds that "false judgment still occurs and reduces respect for the subject."

Of special significance is the practical unanimity of opinion as to the means by which geography in Germany rose from a position of inferiority to the high rank which most correspondents now ac-

cord to it. "The position which geography has won in Germany is based upon the activity in research of its representatives" is a statement by a great leader which is amply supported by other commentaries on the situation. One who credits the advance of German geography to "genuine scientific research and activity in instruction" always puts research first in the combination, apparently not by accident. Another seems to have a similar point of view when he says: "The popularity of geography presents this danger, that many are satisfied with a well written description which adds perhaps to the breadth of our knowledge, but does not deepen our insight into the subject." "Certainly," writes a fourth, "the geographer must be first of all a man of research."

That German geographers are as thoroughly trained as are men occupying comparable positions in other fields is the practically unanimous opinion of those commenting on this point.

Formerly in Germany, as elsewhere, the highest scientific academies were somewhat difficult of access to geographers in their quality as geographers. De Martonne⁸ makes this difficulty a matter of comment, and emphasizes the fact that the great German master of physical geography, von Richthofen, was tardily admitted to the Academy of Sciences of Berlin. But at present our German colleagues seem agreed that in their country geographers now receive the highest academic distinctions as readily as do their colleagues in other fields. From a survey of the situation which is perhaps sufficient although certainly far from complete, one gains the impression that in Germany today geography stands higher in popular esteem and in the regard of learned men than in any other country.

IV. GEOGRAPHY IN BELGIUM

Like France, Belgium long recruited its geographers largely from the ranks of the historians. Both in the universities and in secondary schools, the teaching of geography was until recently in charge of men who took their doctorates in history, and whose geographical equipment was in many cases limited to certain courses in geography given by historians who had enjoyed no geographical training.

RETARDED DEVELOPMENT OF GEOGRAPHY.—In 1890 the Royal Geographical Society of Belgium officially brought to the attention

⁸ Emmanuel de Martonne, *Tendances et Avenir de la Géographie Moderne*, Revue de l'Université de Bruxelles, 1914, pp. 453-479. See p. 455.

of the kingdom's Legislative Assembly the facts that in Belgium there was no advanced instruction in geography, and that the study of the subject had neither sanction nor encouragement. Two years later the Secretary-General of the Society emphasized the non-existence of true professors of geography in the country. In 1900 the King of Belgium signed a decree authorizing the "doctorate in geography" in the state universities.

Two things concerning this degree are worthy of note. In the first place it was to be established, not in the Faculty of Letters, as in the French universities, but in the Faculty of Sciences, because Belgian students of the problem realized that the subject requires, for its best development, a solid foundation of scientific training. In the second place, the degree was to have no legal standing, with the result that holders of the degree possessed no right to teach geography either in universities or in secondary schools. The establishment of the degree as of "grade scientifique" could be accomplished by royal decree without intervention of the legislature, whereas its establishment as of "grade légal" would have required a law voted by the legislative chambers, a process which at best would have demanded much time, and which might have postponed the establishment of the degree many years. While it was hoped that the possession of the new doctorate would open advanced teaching positions to holders of the degree despite its non-legal status, the school administration long refused to appoint such degree holders, and continued to name as geography teachers for the youths of 12 to 18 years doctors of history. Doctors in geography were thus forced to content themselves with teaching positions in the elementary schools.

The doctorate in geography in Belgium still has academic value but no legal standing. Nevertheless the practical situation has changed for the better since the war, and doctors of geography have received official appointments in the schools despite the extra-legal character of their degrees. The state University of Liège and the free University of Louvain are among the few which confer the doctorate in geography; but twenty-eight years after the establishment of this degree the free University of Brussels continues to await the time when the degree shall legally be recognized, before encouraging its youth to enter a path which under present conditions leads to no certain career protected by legal right.

Fortunately, it may not have long to wait. A law has already been passed by one of the legislative chambers, and may early

pass the other, legalizing the degree of doctor of geography and prescribing the training leading thereto. The legal degree, like the one already in existence, will be administered by the Faculty of Sciences; and in line with the practice prescribed for the existing degree the law proposes that the training of the Belgian geographer must include work in experimental physics, general chemistry, analytical geometry and infinitesimal calculus, elementary zoology and botany, mineralogy, geology, and physiography. Belgium continues to pave the way for a scientific treatment of geography by requiring of her doctors a fairly broad scientific training, preparatory to their special researches in some chosen field of geography.

INFERIOR POSITION OF GEOGRAPHY IN BELGIUM.—Belgian geographers differ sharply in their opinions as to the relative standing of geography among the sciences in their country. One holds that the "situation of geography in Belgium is still lamentable", and another substantially concurs in this judgment. A third emphasizes the scientific manner in which geography is now organized in some of their universities, the presence in a single university of six professors of geography dealing with as many phases of the subject, the ready acceptance of graduates in geography as teachers in both secondary and higher institutions of learning, and the probability that the doctorate in geography will be established as of full legal grade by 1930. He does not claim that all hopes are as yet realized, but he is most impressed by the progress being made. I am not sufficiently familiar with conditions in Belgium to evaluate properly these two points of view. But it may be useful for our purpose to summarize certain facts which have been cited by Belgian geographers as evidence that geography has not yet attained its proper recognition in their country.

In the Faculty of Letters of the Belgian universities there are still professors of geography who give all the geographic instruction received by the future historians, although these professors are in some cases themselves historians rather than geographers. This situation, I am informed, may be improved when the new law goes into effect.

The two royal geographical societies at Brussels and Antwerp have been perhaps more active than those of most other countries in improving the standards of geographical instruction in schools and universities; but like most of their sister societies in other lands, they do not find it advisable or practicable to restrict their

activities to scientific work, or to address their program to a scientific public in the same degree as do mathematical societies, botanical societies, or geological societies.

Some years ago, when it was proposed that the Royal Academy of Belgium should establish a decennial prize in geography, the Section of Sciences of the Academy decided by a vote of 16 to 3 that there was not sufficient ground for establishing such a prize because geography was not a science, but merely an aggregate of parts of other sciences. The official opinion of the Academy is worth repeating: "Geography is an aggregate of parts of distinct sciences. . . . Physical geography is the final word of geology. . . . Botanical geography, zoogeography, ethnographic geography are chapters of diverse biologic sciences. . . . Economic and commercial geography constitute the final word of history. . . . It is possible to compare only those things which are comparable. No serious jury would wish to judge between works so heterogeneous in character."

More recently there was created, in response to an appeal by the King of Belgium, a national fund of more than 110 million francs for aiding scientific research throughout the country. To administer the distribution of grants from this fund there were established 24 commissions of 5 members each. No commission was charged with the subject of geography, and no geographer was appointed on any commission. When a Belgian professor of geography requested an explanation of this omission, he was told in reply that geographers desiring aid in their researches might address themselves to the Commission on Geology, where physical geography appears as a sort of vermiform appendix.

In Belgium, as in France and Great Britain, a geographer, whatever his distinction, has little chance of election to the nation's academy of learned men. In the Royal Academy the Section of Letters has in the past occasionally admitted an explorer or traveller whose publications possessed high literary quality. But the scientific geographer would not be received in the Section of Letters on the basis of his scientific merits, while the Section of Sciences makes no provision for geographers among its members.

V. SUMMARY

This review of the present status of geography in four countries of western Europe is sufficient for our present purpose. A more

read

complete discussion would trace the difficulties encountered in Italy, where the historico-literary method of treating the subject long retarded the development of scientific geography, but where physical and military geography have more recently been accorded scientific treatment of high grade; in the Netherlands, where the division of geography between the Faculty of Sciences and the Faculty of Letters and Philosophy profoundly affected the development of the subject; in Norway where the subject is divided between the Faculty of Mathematics and Natural Sciences and the Faculty of Philosophy and History, and where unusual emphasis has been placed on the physical side of the subject, especially oceanography, meteorology and geophysics; in Sweden where geography was first closely allied with history, then moved in the direction of geology, finally showing an important modern development in human geography, and where present conditions seem to resemble those in Germany more closely than those in France; in Poland where "during the Russian occupation geography was considered a politically dangerous science," and where the recent rapid growth of the subject has not yet reached its climax, although work of remarkably high grade has already been produced; and so in turn for other countries." My object, however, has been to outline a general situation, not to paint a complete picture. And while a full discussion of other countries, and larger attention to the ground gained by geography in all countries, would add many valuable details and correct some errors of emphasis, I do not believe it would significantly alter the outline I have sketched. It should be added that I have further compared conditions in Europe with those in a few other lands; but while the data furnished by individual colleagues from non-European countries was unusually full and interesting, and served as a valuable basis of comparison when treating general conditions affecting geography, the information came from too few individuals to afford a proper basis for specific conclusions regarding the status of the subject in those countries.

Let me close this admittedly imperfect review by quoting a statement made by a Polish geographer, reflecting conditions in a newly reconstituted country where the situation naturally presents elements of special difficulty. "There is no trend of geography in Poland," he said. "Every professor has a different idea of the nature of the subject, and is moving in a different direction. I fear to give all my life to geography only to find at the end that there is no science of geography."

We may not fully share the pessimism of our Polish colleague; but we must admit that on the whole the situation is one to give geographers ground for serious thought. That profound dissatisfaction with the present status of our science is widespread in Europe, has long been known to careful observers; but I have thought it useful to review the situation with sufficient detail to lay the foundation for a brief consideration of probable causes and a statement of the suggested cures. In most of the countries where conditions are known to the speaker geography is recognized as a weaker brother among the sciences. Its prestige, as judged by geographers themselves, varies from a little lower than that of the other earth sciences, through successive degrees of inferiority, to no prestige at all, as one geographer expresses it. Both in the public mind and among other scientists it usually encounters a prejudice which ranges from mere deficiency of appreciation, through doubt and distrust, to pronounced disfavor.

American geographers will not fail to note the many close parallels between conditions in their own country and those reported from abroad. Here, as in France, geography has made remarkable advances in the space of a few decades. Departments of geography have multiplied rapidly in our universities, as in those of Great Britain. As in France and in Germany, so in the United States, the rebirth of the subject was the result of introducing into it the scientific content and the scientific methods peculiar to the physical side of geography. With us, as with the Germans, the physical aspect of the subject was in the sequel unduly emphasized, and certain of the physical sciences themselves came to be regarded as of the essence of geography. Here, as in France, the new growth of the subject centered about a single man; but whereas in France that man was a historian, in America he was a geologist. Our university system, like that of Great Britain, favored diversity of aims and interests; with the result that the unity of the French school was never realized in America, and geography with us has ranged all the way from pure geomorphology to pure economics, with highly variable seasonings of history and other subjects.

In America, as abroad, geography is a weaker brother, its claim to a place among the sciences is not yet assured, and its prestige in general is relatively low. Since these last conditions are general, not local, they vigorously challenge our attention. As scientists we should frankly face them, and earnestly seek their causes.

PART II. CAUSES

VI. LOCAL CAUSES OF THE INFERIOR POSITION OF GEOGRAPHY

When we turn to the consideration of causes, we discover that while the doctors are fairly unanimous in their verdict that the geographic patient is ailing, they are not in agreement in diagnosing the disease. Doubtless a variety of causes are operative, and I think it will be useful to analyze some opinions offered by those whose achievements in geography entitle them to speak with a measure of authority. Such an analysis quickly reveals the fact that the causes of geographic ills group themselves into two categories: local causes inherent in the peculiar institutions, customs or situations of one or more countries; and general causes which operate practically everywhere. The former are more easily discerned, and the geographers of each country naturally tend to emphasize them, and I think possibly to exaggerate their importance. The general causes are in some cases less obvious, and while they seem to me of fundamental importance, they do not appear to have sufficiently challenged the attention of many of our geographers.

LOCAL CAUSES IN FRANCE.—Among local causes of the relatively low prestige of geography in France two are widely and strongly emphasized by our French colleagues. Perhaps first in importance is the traditional separation of the faculties of letters and sciences, and the development of geography in the faculty of letters in association with history. Few of my French geographical friends have failed to lament the harmful effects of the formidable barrier separating geography from the sister sciences. Students suffer from the difficulty of securing adequate fundamental training in geology and related fields, while professors suffer from the relatively low esteem in which scientists in general hold men who attempt scientific work on the basis of a training secured in the faculty of letters. In the minds of many French scientists geographers are "literary men," of limited scientific training, developing a certain art in the description of landscapes; and while their art is admired, their science is often distrusted.

For our French colleagues this is a real and fundamental difficulty. Vidal de La Blache surmounted it by the heroic method of sending his students across the barrier into the scientific field to acquire a broad fundamental training as the necessary basis of solid geographic work. The result justified his vision, and his well

trained men, the professors of French geography today, have added brilliant pages to the history of the science in their country. But these men, in turn, are not as a rule following the plan of their master. Occasionally one does insist that his best advanced students shall go into the lecture halls and laboratories of the Faculty of Sciences and there secure a solid foundation in geology, in botany, or in some other related field. But both professors and students report that such procedure is exceptional rather than the rule. In general the French professor of geography finds it difficult to do otherwise than pass on to his students, in the field of letters, such specialized scientific training as his other duties permit.

In this situation I believe there lies real danger for the future of French geography. The geographic field is vast, and no worker in this field can possibly fulfill his geographic duties and at the same time keep pace with modern developments in related sciences. If the geographer of the next generation is to equal the achievements of his predecessors he must, like them, gain his knowledge of these sciences where they are developing with fullest vigor, constantly refreshed by new methods and new discoveries. He must not gain it second-hand from some one who, while he may add something to his former knowledge by reading new scientific treatises in related fields, necessarily devotes his studies and researches largely to the field of geography proper. In making this observation let me emphasize the fact that the difficulty which confronts our French colleagues is not one for which they are responsible. It has its roots in a combination of traditions and circumstances over which the geographers of France have had no control. That they have built up a great school of geography, distinguished by men of international reputation, is a tribute to the French genius which has triumphed over obstacles in the past and which may surely be trusted to surmount the difficulties of the future.

The second local cause of a lower prestige for geography in France which is stressed by many of our French colleagues is the lack of recognition of geography in the highest learned society of the nation, the Institute of France. There may be room for argument as to whether this fact really causes the lower prestige of geography, or is the result of it. Probably in some measure it is both cause and effect, and helps to perpetuate a vicious circle. Certainly one who, like the writer, sees the situation from afar, should express himself with much caution concerning conditions known far more intimately to his French friends. But, sub-

ject to the reserve just implied, I should like to suggest that even as a local cause the absence of a specific place for the new geography in the Institute may not be of major significance. The conservatism of the Institute being well known to French scientists, they must in some degree discount a classification of knowledge dating from the time of Louis XIV, little changed by Napoleon, and not at all since. One may also be permitted to wonder whether great exponents of the new geography would not in fact be elected to the most nearly appropriate section of the Institute if geography were fully recognized by scientists in other fields as a branch of learning calling for exercise of the highest type of intellectual powers. Perhaps when other difficulties are removed from the path of geography, and the subject has gained its full place in the sun, this particular problem will in one way or another solve itself.

LOCAL CAUSES IN GREAT BRITAIN.—Our British colleagues stress general rather than local causes in accounting for the markedly low prestige of geography in their country. Yet local causes are occasionally cited. Among these is the poor quality of geographic instruction in the schools a generation or so ago, which repelled men who are now responsible for the distribution of University endowments. I shall touch on this subject again when discussing local conditions in Belgium, where this particular difficulty is more frequently mentioned. Probably more important is the fact that in this country geography took its rise from different departments in a highly diversified university system. It is true that the effects of this system are not often specifically mentioned by British geographers in statements of obstacles interfering with the satisfactory development of their science; and perhaps I do wrong to give it so prominent a place in this catalogue of difficulties. Nevertheless appreciation of the importance of this factor seems to me implicit in many of their statements. That the difficulty is real and of large proportions, no one even superficially acquainted with the development of geography in Great Britain can doubt. What may be the cure, time alone will reveal. Our British friends seem to have a way of achieving excellent results by illogical methods, and if the more serious difficulties confronting geography can be overcome by them, we may confidently anticipate the solution of this local problem.

Another local cause of geography's unsatisfactory situation in Great Britain results from the rapid growth of the subject in the universities, with increase of departments of geography at a rate

which has exceeded the supply of properly equipped geographers. The increase of departments has been especially a post-war phenomenon, and therefore came at a time when relatively few young men in Britain had enjoyed full academic training in any subject. As a result men not properly trained, or men well trained in related subjects but not specialists in geography, have been called to fill geographical positions. Eighty per cent of the British geographers who gave formal opinions on the present status of their science assigned this difficulty a prominent place in explaining the low prestige of the subject in Great Britain. One distinguished authority writes: "The deficiency in mental equipment [of some university teachers of geography] is explained by the too recent, and perhaps the too rapid creation of geographical chairs or departments in the universities. While care has always been taken to appoint the best candidate available, the choice has often been restricted." Another puts special emphasis on the fact that men have been appointed to lectureships and readerships who would never have been considered for professorships. The one who emphasized deficiency in mental equipment did not mean to imply deficiency in ability, for obviously able men trained in other lines may be poorly equipped for geographical work. We need not pause long over this aspect of our problem, for if geography can once command its full share of honor and prestige, men of the highest order will prepare especially for work in a field offering attractive opportunities in teaching and research.

Other local causes for dissatisfaction in Great Britain are occasionally mentioned. One criticizes the ease with which degrees in geography can be secured in British universities, stresses the need of more thorough training in physics, mathematics, and modern languages, and calls for a much higher standard of requirement in respect to both preliminary equipment and specialized studies.⁹ Another states that the attempt to interlock in geographical studies the two faculties of arts and pure science is welcomed by neither faculty. I am not able to evaluate the importance of these particular troubles, and can merely say that since only an occasional geographer has mentioned them, they apparently are not uppermost in the minds of our British colleagues.

LOCAL CAUSES IN BELGIUM.—In Belgium the local difficulties chiefly emphasized are the long association of geography with

⁹ This view is contested by another British authority, whose experience with examinations in several universities leads him to doubt whether standards for degrees in geography are abnormally low.

history, the fact that geography has long been taught chiefly by historians and men in other subjects who have had little or no geographical training, and the inferior quality of geographical instruction in the secondary schools where poor teachers instilled in the minds of past generations of students a low opinion of the subject. All three conditions have improved since the war, and should be further improved when the proposed law for the creation of a doctorate in geography of full legal grade administered by the Faculty of Sciences, is enacted. It is difficult for a foreigner to estimate the relative importance of the third factor in a particular country, but in general I have a strong impression that poor teaching in the secondary schools is a minor factor in determining the general prestige of any subject. In the first place our youth seem to possess unlimited powers of forgetting what they learn, good and bad alike; and if the higher instruction of the universities is of good quality, and a subject enjoys honorable repute there, the earlier teaching will play a small part in fixing the general standing of that subject. It must be admitted, however, that the youth of an earlier generation, who suffered from bad teaching of geography in the primary and secondary schools and who found practically no geographic instruction in the universities, grew to maturity with a strong prejudice against the subject. As many of these men are now in position to exercise a retarding influence upon geographic progress, we must tolerate their opposition until university graduates of a new generation, schooled in a better type of geography, replace the unhappy victims of the days of "capex and rivers."

In the second place, I believe that good work in any subject obeys the laws of gravity. It percolates downward, not upward. Improvement of geographical teaching in the universities will inevitably lead to improvement in the secondary schools; but I doubt whether improvement in the secondary schools, assuming that it could first be achieved there, would materially affect the situation in the university or the general prestige in which the subject is held by competent critics.

These references to special conditions in three countries will serve to show with sufficient detail the general nature of *local* obstacles which geographers must surmount in developing their subject. It is true, of course, that some of the difficulties mentioned are present in other countries; but I have treated them only where a consensus of competent opinion points to them as peculiarly significant in explaining the local situation. Other

sources of difficulty are advanced as of local importance, but these seem to be present in so many places that I have preferred to treat them under a more general heading.

VII. GENERAL CAUSES OF MINOR IMPORTANCE

In considering the general causes held responsible by various authorities for the relatively low prestige of geography, I shall find it convenient to subdivide them into two groups: those which seem to me of minor importance, and those which I believe play a major rôle in obstructing the progress of our science. It should be understood, of course, that this classification is wholly my own, and altogether a matter of personal judgment. I have placed in the group of minor causes some which others hold primarily responsible for all the ills of the science; at the same time I have assigned a major rôle to a few causes which most geographers do not even mention.

A. SCARCITY OF POSITIONS OUTSIDE THE TEACHING PROFESSION.—One of my American colleagues has advanced the thesis that the one great cause of geography's low standing lies in the fact that outside of the teaching profession there are so few openings for men with geographic training. In his opinion, if a large demand for geographers were to develop, the prestige of the subject would immediately rise. I was therefore interested to see how far European opinion would support this view. French geographers are substantially agreed that nearly all students specializing in their subject expect to become teachers, and that almost no positions are open to them outside of teaching posts in secondary and primary schools, with a very few places in the universities. On the other hand the information submitted by British geographers indicates that, although teaching must absorb the greater part of the geographical output, more outside posts are available in that country. Civil service positions in crown colonies, posts on city and regional planning commissions, in cartographic institutions, in the meteorological service, the health service, and other government and municipal departments, are among those mentioned. Thus it appears that in France, where the prestige of geography is higher, there are fewer positions available outside of teaching than in England where geography stands distinctly lower. It is perhaps significant that out of twenty-six geographers from different countries who gave opinions as to the causes of a low standing for their subject, only three mentioned lack of positions outside the

field of teaching. Perhaps more than one of them would agree with the opinion of a British geographer: "Geographers must, and can, open many doors for themselves. When they deliver the goods the market will appreciate them and absorb them."

Other considerations make me doubt the importance of scarcity of positions as a factor in causing the low prestige of geography. A few years ago geology experienced a heavy demand for men to fill positions, some of them of real responsibility, in the oil fields. As a result many promising graduate students abandoned their studies and researches to accept paying positions, while some institutions indulged in an orgy of turning out imperfectly trained oil geologists. More than one thoughtful observer is convinced that the net result will be harmful to the prestige of geological science. One of my botanical colleagues assures me that the demand for men to fill posts in federal and state agricultural services has proven a veritable curse to botany as a science, has retarded its development, and lowered its standing. I am not passing judgment on the accuracy of these opinions, but I do want to make clear that this is a question which has two sides.

I think few will question that astronomy is a science which stands high in the esteem of public and learned men alike, that competent specialists in this field enjoy peculiar prestige, and that they have received more than their share of highest academic honors.¹⁰ Yet my colleague in astronomy assures me that outside of the teaching profession there are scarcely any posts open to men trained in this field. The application to navigation and surveying of the *results* of astronomical studies is of immense importance; but students of astronomy do not become navigating officers or surveyors, while the practical navigator or surveyor generally knows little or nothing about astronomy. Teaching and research must absorb the astronomical output of our universities, just as they must absorb the geographical output; and I can find in this latter situation no adequate explanation for the low prestige of geography.

B. SIMPLICITY OF GEOGRAPHIC TERMINOLOGY.—One British colleague lists among other causes of low prestige the fact that our science has such a simple terminology; that we do not mystify the ignorant with "words of learned length and thundering sound." I suppose some may find in a poverty of technical language indica-

¹⁰ See E. C. Pickering, *Foreign Associates of National Societies*, *Pop. Sci. Monthly*, Vol. 73, 1908, pp. 372-79; Vol. 86, 1915, pp. 187-192.

tion that geography lacks precise and new ideas which require new terms of precision for their proper presentation. If this be merely the thoughtless reaction of the untutored layman, I think it need cause no undue anxiety; for the opinion of geography which determines the degree of its scientific prestige is not manufactured by laymen. On the other hand, if this be the critical judgment of fellow scientists who see in loose and simple terminology proof that our published geographic product represents a low stage of scientific progress or a low order of intellectual achievement, then we would be foolish to ignore the criticism. Assuredly a specialized terminology does not necessarily denote scientific profundity, as one may prove to his satisfaction by examining the sporting page of a daily newspaper or some modern treatises on pedagogy. But can a new and important science reach a mature stage of evolution without the aid of a new and precise terminology? The answer to this question is not so obvious. Let us leave it unanswered for the present.

C. GEOGRAPHY LONG MERELY A SCHOOL SUBJECT.—A few attribute importance to the fact that geography was long merely a school subject, something for children to bother with for a time and then to put aside when they attained man's estate. That it was abominably taught in the schools only increased the disrespect in which the subject came to be held. This taint of dishonor, in the view of these critics, continues to plague the name of geography even where the subject itself has been transformed into an entirely new study of advanced university grade. I would not deny that this argument has some force, but I think we should be seriously mistaken if we attributed too much importance to it. Whether the history of education furnishes examples of other subjects which have first been taught only in the schools, and have later been included in the university curriculum without suffering in prestige from a modest ancestry, is a pertinent question into which I shall not stop to enquire. There are more grave causes of geography's low prestige which await our attention.

D. CHARACTER OF GEOGRAPHICAL SOCIETIES.—The popular or semi-popular character of geographical societies, and of many of their lectures and publications, is regarded by geographers in several countries as a very significant factor in keeping the reputation of geography at a low level. Twenty-five per cent of those listing causes of geography's low position give this one an important place in the indictment. It is pointed out that these societies

are still largely controlled by non-scientific laymen, that their interests are still chiefly in exploration and travel, that their lectures and publications stress the popular and pictorial. Even when scientific enterprises are supported and good scientific results are published, the dilution with popular material in order to make the program appeal to a large general public is such as to cause scientists in other fields to compare lectures and publications of geographical societies unfavorably with those of botanical societies, geological societies and other similar organizations. I quote two typical opinions, expressed by representatives of different countries: "Some of the provincial geographical societies have not helped to raise the status of geography, as they are only lecture societies, and are only interested in the popular spectacular aspects of travel." "I fear that our geographical societies, which recruit their members largely outside scientific geographical circles, by their popular lectures, often of doubtful scientific value, do us more harm than good."

Few will question the judgment of our foreign colleagues that here is a real cause of geography's relatively low repute, although it would be most unfair to forget the high services which some of our geographical societies have rendered to geographic science. Let us recall, merely by way of illustration, the rôle played by the Royal Geographical Society of London in getting geography established in the English universities, and its financial as well as moral support of professional geographical instruction at Oxford and Cambridge; the activities of the Belgian societies, already mentioned, in improving the situation of geography in the universities of that country; the strictly scientific studies supported by funds of the Société de Géographie of Paris, and the encouragement given professional geographers by medals, monetary prizes, and research funds awarded by this and other geographical societies; the expeditions for technical scientific investigations organized by the National Geographic Society at Washington and by other societies, both those named and many unnamed here. It is useful to recall these important services to geography, which by no means exhaust the contributions made to the scientific side of our subject by societies composed of lay members. Yet it must be admitted that the average geographical society concerns itself less with advanced scientific research than with popular aspects of the subject. There are popular societies for nature study, popular botanical societies, and so on. But to offset these there are, for example, a number of strictly scientific botanical societies which

offer programs of technical papers. In contrast, geography can show only a rare case of an organization which puts scientific work of high quality at the head of its program; and even more rarely one in which membership, lectures and publications are all of scientific quality.

Opinions may differ as to the remedy. Some would like to see our geographical societies devote themselves exclusively to strictly scientific activities, expending their funds for advanced geographic research and publication. But the question arises as to what funds would be available for such a program if membership were limited to scientific geographers, and if the financial aid of those unwilling to support such a program were withdrawn. Perhaps the remedy lies in the hands of the scientific geographers themselves, who may on the one hand by friendly and tactful leadership inspire the lay membership of popular societies with an enthusiasm for becoming partners in a great program of scientific research and publication; and on the other hand may found new and strictly scientific societies, limited in membership to professional geographers and devoted to the discussion of technical results of geographic research. That the first objective is not unattainable we have ample proof in the remarkable achievements of the American Geographical Society, an organization with predominant lay membership, lay trustees, and lay financial support, devoting 98 per cent of an annual budget of \$125,000 to scientific research and publication under the efficient directorship of a scientifically trained professional geographer.¹¹ That the second objective is equally attainable would seem to be indicated by the quarter century of successful history of the Association of American Geographers, a national organization in which membership is limited to professional geographers who have published a substantial amount of original work, and the programs of which consist of technical papers presented by the members or by investigators introduced for the purpose.

Whatever the solution, I do not think we can ascribe to this factor a major rôle in explaining our difficulties. The geographical societies could perhaps do far more than they have done to develop a real science of geography. But if geography overcomes its other difficulties and takes a high place among the sciences, the society problem will, I think, solve itself. Some will become known

¹¹ The reader may form some idea of the outstanding activities of this organization by consulting the last two annual reports published in the April issues of the *Geog. Rev.* for 1928 and 1929.

as societies for the promotion of popular lectures, exploration and travel; others will take rank as high grade research organizations. The first cannot seriously impede the onward progress of the science, while the second will contribute to it invaluable aid.

E. PREVAILING IGNORANCE OF NATURE AND AIMS OF GEOGRAPHY.—A few members of our profession have ascribed the unsatisfactory standing of the science to an ignorance of the nature and purposes of the new geography, not only on the part of the general public but also in learned circles. More than one has noted that prejudice against his subject disappeared when he increased his contacts with fellow scientists and made them familiar with his work. This is a significant tribute to the good work these men are doing, but I doubt whether ignorance of a science on the part of those without its pale is ever a major factor in retarding the progress of that science. Successful achievement is not long hidden from colleagues in neighboring fields, and it is the intelligent judgment of such men that does most to determine the general prestige of a scientific subject. Furthermore, as geographers we must admit that so long as we are not ourselves agreed as to the nature and aims of geography—and nothing is more certain than that we *are not* so agreed—we can scarcely blame others for remaining ignorant on these points. We must accept this particular prejudice—and harmful it undoubtedly is—as the inevitable by-product of troubles which are more deeply rooted in the geographic situation.

F. INDIFFERENCE OF PUBLIC AND PRESS TO SERIOUS GEOGRAPHICAL WORK.—Two foreign colleagues stress the fact that serious geographical works do not find a large reading public, and one holds the indifference of the press to such works, and to the real scientific accomplishments of professional geographers, in considerable measure responsible for the relatively low prestige of geography. With greatly increased costs of publication the difficulty of finding an outlet for advanced works of strictly scientific character must react unfavorably upon geographic research. No doubt, also, greater recognition by the press of scientific geographic achievements would increase the popular prestige of our subject. But these are difficulties we share with other subjects, some of which are much worse off in this respect than are we, and yet enjoy an assured standing that we lack. My own impression is that if the geographic output became more erudite and more scientific

than is now the case, the market for the output would shrink at the same time that the prestige of the subject was enhanced.

VIII. GENERAL CAUSES OF MAJOR IMPORTANCE

A. YOUTH OF THE SUBJECT.—While the foregoing causes of geography's unsatisfactory position are of real significance and of general occurrence, they seem to me of subordinate importance in comparison with five major causes, likewise of general effect, which we shall now endeavor to analyze. I place first in order, but not in importance, the youth of the subject. A large majority of our foreign colleagues include this factor when they list causes of the relatively low prestige of geography in different European countries. Some hold it primarily responsible. A number fail to mention it, but one only specifically excluded this factor, on the ground that geography really has a venerable age and, that while it has changed its emphasis and orientation, this is likewise true of other sciences. It may perhaps be granted that modern geography is more strikingly differentiated from the older subject bearing that name than are other natural sciences, and that this differentiation occurred so recently as to cause the subject to bear an exceptionally youthful complexion. Botany, geology, and certain other sciences took their rise in a day when knowledge was more limited, methods were more crude, and standards were lower. Their youthful errors were less harshly judged by less competent critics than exist today. Geography suffers the penalty of late development in the midst of sciences already advanced to maturity, and in the presence of experienced judges admirably documented in a variety of related fields. Assuredly the test is a severe one, and we must expect for a time to suffer in comparison with our elder associates. But we need not be unduly anxious in respect to this particular difficulty. Youth is a disease which cures itself. We should, however, frankly recognize the fact that we have not attained the degree of advancement appropriate to our years, and seek other causes of retardation which may demand our active intervention.

B. GEOGRAPHY ATTRACTS UNDUE PROPORTION OF INFERIOR MEN.—A second point on which there is some accordant testimony is that geography suffers seriously from the fact that it attracts into its field an unusual proportion of inferior men. As one geographer expresses it, "In many cases a man not quite at the top of the tree in his own subject has taken to geography as a less exact science." It is perhaps natural that an imperfectly standardized

subject of such wide range as geography should furnish shelter for weaker brethren from related fields, especially when the rapid development of the subject has created a demand for men difficult to supply. That men of this type by their instruction and still more by their publications (and sometimes by their lack of publication) lower the repute in which the science is held, seems indisputable. It is reasonable to expect, however, that if geography can conquer for itself a more clearly recognized field of action, in which the standard of accomplishment is as high and the requirements of its disciples as rigid as are those in other sciences, the weaker brethren will find it more and more difficult to enter the field.

C. VAST SCOPE AND POOR DEFINITION OF GEOGRAPHY.—The third major cause of the relatively poor position of geography to which I wish to direct attention is one stressed by almost every thoughtful student who has considered this aspect of the situation. I refer to the vast scope and poor definition of the subject. One may argue that herein lies a great advantage of the subject as a peculiarly rich and varied field for study and research. But he must also frankly face the evils that attach to great diversity of subject matter and wide variety in methods of treatment.

These evils are legion. Almost inevitably the geographer, as he now prosecutes his studies, is led to infringe upon fields claimed by others who have longer occupied them. As one Belgian colleague expresses it: "Under the name 'geography' many publications deal with problems which belong to other sciences," and he goes so far as to add: "This is the principal reason for its (geography's) bad reputation." I would myself grant the geographer, and any other scientist, much freedom to enter any field that may attract him, providing he has competence to walk there, and science as a whole has something to gain by the so-called trespass. But we must at the same time admit that experienced workers in any field regard unfavorably intrusion by new comers imperfectly trained in the methods of dealing with matter there to be studied. In such cases *unfamiliarity* breeds contempt, and the charge of dabbling in many fields and securing but a smattering knowledge of each, is laid at the geographer's door. That the charge is in some measure justified seems to be the almost unanimous opinion of our European colleagues, to whom I submitted the following formal inquiry: "Does the fact that geography covers so vast a field, and draws its material from so many fields of learning which the geographer cannot know intimately, tend to give the

subject a superficial character which causes it to be regarded unfavorably by scientists who work in more restricted and more clearly defined fields?" Only two geographers returned a negative answer. A number gave qualified assent, while sixteen gave emphatic positive answers including such phrases as, "This is undoubtedly the case", "This is an undoubted fact", "This question puts the matter in a nutshell."

Other difficulties derive from this vastness of scope. As interpreted by our French colleagues, geography implies a measure of art as well as of science, and emphasis is placed on the difficulty of securing men who are at the same time able in research and possessed of good descriptive powers. The unusually heterogeneous character of programs of geographical meetings is made a matter of comment. A measure of dissatisfaction with geographical excursions is certainly inevitable when this term may involve a study of an industrial plant, of the geological structure of a given locality, or of the transition from Norman to Early English architecture in a certain cathedral. In citing these items I have actual cases in mind, in which the subjects specified were not side issues but essential parts of geographical excursion programs; nor was there any common geographic factor which bound these widely dissimilar items to a single central idea. They illustrate the powerful centrifugal forces operating in a subject of such vast scope as modern geography.

The definition of so vast a subject is a matter of such difficulty, and the delimitation of its field so complex a problem, that even approximate agreement on definition and limits is not achieved, while the aims and purposes of geography remain in controversy. Yet so acute is the unsatisfactory situation born of geography's unbounded scope that there is a widespread desire for limitation of the field and better definition of the subject as one of the first steps to improve the standing of our science. Of all the cures recommended by our European colleagues to remedy the present situation, more than half involve definition or limitation of the subject in one form or another. Some call for delimitation without specifying the direction it should take. Others indicate the pathway to progress; but they point in widely varying directions. One urges concentration on the relation of human societies to the earth, while another insists on ignoring relationships, saying: "So long as geography is defined as 'the study of the relations between the earth and man,' or as 'the study of correlations between the organic world and the inorganic world,' it will remain an amalgam (of

other sciences), will continue to live by rapine, and will not be respected." The important thing for our purpose, however, is not the precise cure suggested, but the fact that so many of our colleagues see in better delimitation of our field the only escape from a very unsatisfactory situation. A distinguished British geographer cautiously expressed a widely held conviction when he said: "I am inclined to think that what I believe to be the inferior reputation of geography . . . is [due to] the lack of a generally recognized definition of geography clearly marking it out from other sciences." Another British colleague writes: "Difficult or not, I regard limitation and definition as essential."

So long as the work of geographers is directed to an endless variety of unrelated problems in a field of unlimited scope, the progress of our science will necessarily be slow. In other scientific fields one worker profits by the labors of his fellows, erects his portion of a great edifice upon the solid foundations laid by earlier investigators, while those who follow build story on story until there rises such a structure as cannot fail to command the admiration of the world. Geographers have scattered widely over the plain, building numberless separate houses upon countless plots of land. Many of the buildings are substantial in construction and of exquisite beauty. But less frequently than in the more restricted and unified sciences does another build higher upon the same structure. The lowly houses are lost to view. The world sees only lofty edifices, and the able young investigator, eager for distant visions into the unknown, bends his steps toward one of those as offering the best opportunity to build higher and see farther. Geographers have too long extended their researches horizontally. We must learn to roam less widely and build higher.

Relation of Geomorphology to Geography.—If I may be permitted to express a long matured personal opinion I would say that one step in the necessary delimitation here discussed must inevitably be the exclusion of the science of geomorphology from the field claimed by geography. I fully realize that there exists distinguished opinion contrary to this view. Especially must one hesitate long before taking a position different from that occupied by the great master of geomorphology who so revolutionized the science as practically to recreate it. For Professor Davis geomorphology seems to be geography, for he calls the cycle of land-form evolution, which his creative genius gave to the science, "the

geographical cycle."¹² His view has undoubtedly gone far toward having geomorphology widely accepted not merely as a vital factor in geographic studies, but as geography itself. In France the peculiar conditions under which geography developed assured wide currency to this view, and French geographers almost unanimously claim geomorphology as lying wholly within their field, although one says simply that "it may be by itself a geographic science, on condition that it be cultivated by geographers who have at the same time specialized in geology; that is to say, by geologists, who after having worked independently in geology, have realized the importance of a study of landforms. The work of American geographer-geologists is sufficiently impressive to demonstrate the utility of this method." Among the personal opinions gathered by me only one, that of a distinguished French "geographer-geologist," definitely excludes geomorphology from geography, and recognizes it as a branch of geology.

In America, on the other hand, there seems to be a rapidly growing tendency to define geography as a study of relations existing between organic life and inorganic environment, and on this basis to exclude pure physiography as such from the geographic field. Those holding this view recognize geomorphology as a branch of geology, although many agree that it forms the necessary solid foundation for certain geographic studies. The strength of this view may in part be gauged by the remarkable decline in the number and importance of geomorphologic papers on the programs of the Association of American Geographers, whereas such papers continue to hold an important place on the programs of the Geological Society of America. British geographic opinion on the

¹² I have here given the view which seems to prevail in Davis's writings. The reader who studies his Geographical Essays in the chronological order of their publication (indicated in the Preface of the work) will be impressed by the fact that in his earlier writings he makes *present form* the criterion by which things geographical are to be distinguished from things geological. Of the trilogy "structure, process and stage," structure and process are definitely excluded as geological, and the portion of geological time occupied in the evolution of a landform to a given stage of development seems also to be excluded. At this time there was no question of the relation of form to organic life. Later Davis makes this *relationship* the unifying principle of geography, and seems to exclude from geography all physical studies not specifically directed to the elucidation of the relationship between physical environment and organic life.

Thus while Professor Davis's writings, considered as a whole, may appear to support the view that geomorphology is geography rather than geology, he has in later years moved much closer to the conception of geography advocated in the present essay. I understand that he would not now consider most of his writings as strictly geographic in character, and that he would classify himself as a physiographer or geomorphologist rather than as a geographer.

whole appears to incline toward the view that geomorphology, especially if it considers the evolution or origin of landforms, is a part of geology. One British geographer who places the subject in geography seems to imply that it equally belongs in geology; a second thinks it may be studied with difference of emphasis by both geographer and geologist; a third recognizes it as "a subject *per se* for professional geographers who specialize on that side; but not, except in its human relations, in *general* geographical education for citizenship." Two others say that the description of landforms is geographical, but that the subject becomes geological if origin or evolution are considered. Further expressions of opinions include the following: "I regard geomorphology as a branch of geology primarily,—in the sense that research in it is geological work. It is of course an essential basis for geography"; and (in answer to the question: "Is geomorphology by itself a geographic subject?") "No. Geomorphology *should* be done by geologists. . . . Geologists do too little geomorphology and so, in default, geographers have often undertaken the task."

May I briefly expand my own views on this important question? I hold that the three physiographic sciences meteorology, physical oceanography, and geomorphology, to which I would add what we curiously call "mathematical geography," are absolutely essential parts of a geographer's training; and that there is no truly geographic work which does not specifically involve consideration of one or more of these subjects. In other words I cannot recognize as geography anything which leaves out the "geo," any more than I can recognize as human geography something which leaves out the "homo." But there is a world of difference between making geomorphology, for example, a factor in a geographic study, and including it bodily in the geographic field. The latter procedure would seem to me unfortunate in the highest degree, both for geography and for geomorphology.

It is unfortunate for geography first because it adds one more to the powerful centrifugal forces tending to disrupt that subject. Geomorphology is wholly distinct in its subject matter and in its methods from meteorology, and both in turn differ widely from physical oceanography. The gulf which separates them all from commercial and sociological studies is hardly to be measured. If men working in all these fields are to be thrown into a geographic melting pot when they have nothing in common as regards matter or methods, then we have no right to hope that our subject will ever be respected by thoughtful men. I believe there is a geog-

raphy where geomorphology and human activities meet on common ground; and that this ground is eminently worthy of study. But, to quote a well-known British geologist, "Geomorphology is an essential and vitally important branch of geology, quite independently of its effect on life." As I see it, a geomorphologist may do able work in his field without ever thinking a geographic thought. To stretch the limits of geography to englobe everything observed on the surface of the earth and everything found there at the present time, is I think to rend the subject in pieces, destroy its unity, and deprive it of any title to the name of science.

In the second place the inclusion of geomorphology in the realm of geography injures this latter science by deflecting the energies of geographers to the study of problems only remotely related, or not at all related, to those things which most geographers recognize as their chief concern. There may be truly geographic cycles in man's occupation of this globe which remain to be discovered, described and explained; and it would be unfortunate were competent geographers to miss these because in regional and other studies their energies were distracted by enticing aspects of the geomorphologic cycle.

Geomorphology itself has suffered, and will continue to suffer, from attempts to include it in the geographic realm. In the history of its development, in its methods, and in its affiliations it is a part of geology. It rests upon the two great branches of dynamic and structural geology, and cannot achieve its fullest possibilities unless carried forward by men thoroughly trained in and constantly in touch with these subjects. It studies the evolution of landforms through appreciable periods of geologic time, and is inextricably linked with a wide variety of geologic problems. To tear it out of its natural setting, and place it in the hands of men not solidly trained in geologic methods and actively in touch with geologic progress, would be fatal to the best interests of the science. It is no mere accident that the greatest advances in geomorphology have been made in those countries, like America and Germany, where professional geologists, even when including it in geography, have devoted themselves to its study.

Unless geography is to remain an agglomeration of parts of distinct sciences, and those parts of sciences are to suffer seriously in their development, we must make a clear distinction between those things which, while lying outside the geographic field, are indispensable for the use of the geographer; and those things which are of the essence of geography itself. When this is done,

the vast scope of the subject as now understood in many quarters will be restricted, and the subject will attain a greater measure of that unity and cohesion which the vast majority of geographers seem to feel is its most pressing need.

D. SYNTHETIC AND DESCRIPTIVE STUDIES LESS HIGHLY VALUED THAN ARE ANALYTIC STUDIES.—A very few of our foreign colleagues have put a searching finger upon what seems to me a most fundamental cause of geography's low repute, by pointing out that the scientific world in general does not value synthetic and descriptive studies as highly as it does analytic studies. I think any study of the history of scientific progress will show that the great landmarks in that progress are studies of the latter type. The prestige of a science depends, not on any combination of subordinate factors, but upon the quality of those intellectual operations upon which the advancement of the science has been conditioned. Both in learned circles and in public esteem the intellectual powers required for interpretation, synthesis, description, and formulation are regarded as of a lower order of excellence as compared with those required for analysis, prediction, discovery and invention.

Is there not real danger that, by making geography primarily a synthetic and descriptive science, geographers are dooming it to a place of secondary importance from which nothing can ever raise it? That the highest intellectual abilities are expended on synthetic and descriptive studies does not affect the problem. The world believes that the highest mental powers are not necessary for work of this type, and it values the work for what it really costs, not for what is expended on it. No interpretation of human relations to physical environment, no new correlation of facts previously discovered by others, no description of regions built on synthetic studies of the best quality, no formulation into principles of data already in possession of mankind, will ever receive the homage accorded the discovery of a law of evolution, the prediction of the existence and position of a new satellite, or the invention of a planetesimal hypothesis. If we are to make geography respected in the same measure as are other sciences, we must elevate it to their level by making it something more than a synthetic and descriptive science, and by prosecuting researches in those aspects of the subject which demand the highest intellectual powers of man.

E. TOO MUCH TEACHING AND TOO LITTLE RESEARCH.—This brings me to the last but by no means least of the major causes of geography's unsatisfactory estate. Here again more than one

European colleague has put an unerring finger on one of the sorest spots in the geographic situation. Our subject suffers from too much teaching and textbook writing, and from too little research.

Assuredly passing on to the new generation knowledge acquired by the old is a vitally important consideration. Assuredly, also, the youth who are to be the investigators of the future must have tools with which to work and must be trained in the methods of using them. But it is one thing to recognize these needs and take reasonable steps to supply them, and quite another thing to make an extended program of course instruction the primary concern of a university department of geography. There is ample justification for a course of lectures which presents the professor's special point of view on large problems of his field of study, opens the doors to many interesting phases of the subject, and directs the student to those sources of information which will give him mastery of present knowledge on any particular topic. In a university there is even greater justification for a seminar or individual conferences in which students engaged in research under the professor's direction present for discussion and criticism the results of their labors, thus gaining needed mastery of tools and methods. But I see no valid excuse, either in college or university, for a large array of courses in which overworked professors hand out predigested information to docile classes.

Research vs. Instruction.—I realize that here I touch on a large problem, one which transcends even the generous limits of geography. We are in the midst of a widespread movement, the precise meaning of which it is as yet difficult to decipher, but which manifests itself by a crowding into the colleges and universities of unprecedented numbers of students who are impelled by social rather than by intellectual motives. In the universities these students demand, not opportunities for individual study and research, but more courses of instruction. Obliging professors and administrative authorities, forgetting that the historic mission of the university¹⁸ is to advance knowledge and for this purpose to train capable investigators, rather than to provide mass instruction for cultural purposes, add new courses to keep pace with the growing

¹⁸ In this and following pages the term "university" is not intended to include institutions or faculties giving collegiate or undergraduate instruction (even though they may be called universities), but only those giving post-graduate work of non-professional character. Where graduate and undergraduate faculties are not separated, the observations here set forth should be held to apply primarily to the graduate portion of the work, although they may in some measure be applied, with proper discretion, to undergraduate work.

demand. Thus the university is transformed into a combination super-college and professional school, chiefly engaged in instructing large classes and in preparing more teachers to give further instruction. Exploration of new fields, the chief function of the university, is relegated to the background. University professors come to believe that they are paid for their much teaching, and that research is merely a desirable side-issue, a useful occupation for evenings and vacations, but something not to be indulged in until the "regular work" of class instruction is fully provided for. There spreads the pernicious idea that he who carries the heaviest load of teaching is the most faithful servant of the university. "Bigger and better programs of instruction" becomes the slogan of misguided department heads, original investigations languish, tired professors produce moderate amounts of mediocre work, and government bureaus, commercial concerns and other outside agencies are compelled to assume the function of research neglected by universities faithless to their high trust.

That the situation is sufficiently grave to challenge serious consideration by those responsible for the future of the university, no careful observer can doubt. I am informed that Oxford University recently altered its statutes so as to place greater emphasis upon the obligation of the professor to promote research. Not long ago the president of a leading American university acutely remarked to one of his faculties: "Some of you professors will never earn your salaries unless you give fewer courses." A philosopher who is also the dean of a large graduate school has seen the growing peril with clear vision, and his repeated warning will bear reading by every scientist concerned about the future of his subject.¹⁴ The Joint Committee on Graduate Instruction of his university recently submitted to the several faculties for their consideration the following resolutions:

Whereas the increasing responsibilities thrown upon the Graduate Faculties by the growth in the number of students and in the number of graduate degrees, with increased demands for hours of instruction, conference and administration, threaten to narrow the research activities of the Faculty, therefore be it

Resolved:

1. That the attention of the several departments be called to the fact that provision for programs of research by the staff should have at least

¹⁴ F. J. E. Woodbridge, Annual Reports to the President of Columbia University for the years 1914, 1916, 1917, 1919, 1920, 1921, 1922, 1925, 1926, 1927, 1928.

equal consideration in the preparation of departmental budgets with provision for programs of instruction, conference or administration; and

2. That the departments be requested to give special study to methods of protection and assistance for individual and coöperative research in the organization of departmental activities and expenditures; and

3. That the departments be asked to report annually to the Committee on Instruction of the Faculty as to research undertakings now in progress, this report to be forwarded at the time of forwarding the budgetary recommendations.

That university professors are beginning to see the evils of the present situation and are taking steps to remedy them, is indicated by the action of the Faculty of Pure Science in the same institution last referred to, which recently enacted, by unanimous vote, the following legislation:

1. That Departments be requested to take appropriate steps to determine, and to acquaint members of the Departmental staffs with, the obligations of each professor as to instruction and research respectively; and especially to direct attention to the fact that while under certain faculties the professor's first obligation may be to the student rather than to the subject of instruction, scholarly study and research for the advancement of his subject usually constitute a highly important obligation, even where secondary; and that under the Graduate Faculties the primary obligation of a professor is to his subject, the scholarly advancement of which should command the professor's best energies and the major portion of his time.

2. That Departments be requested to encourage professors engaged wholly or chiefly in work under the Graduate Faculties to devote the major portion of their time and energy to productive research; and to this end to suggest that such professors restrict formal instruction to one general course open to properly qualified graduate students, and one more specialized course dealing with the professor's particular field of investigation. It is assumed that normally the latter course will be a seminar or research course open only to capable students participating in the professor's researches and thus engaged in learning his methods and in contributing to the success of his investigations; but it is not desired in any way to restrict the freedom of the individual professor to offer courses of such nature as he deems best calculated to advance the interests of his particular field of knowledge.

3. That encouragement be given to departments and professors to make such arrangements as to accessibility of professors to students and others as will obviate unnecessary interruptions of professors in their work.

4. That Departments be invited to scrutinize their Departmental programs of instruction with the object of determining whether there exists an undue multiplication of courses, and to take such action in the direction of eliminating courses, combining courses, or offering courses in alternate years only, as conditions may seem to warrant. There exists within the University the belief that, in some Departments at least, an

unduly large number of courses of instruction are offered under the Graduate Faculties, with the result that the time and energies of both professors and students are dissipated over too wide a field, while scholarly pursuits, including productive research, are seriously restricted.

5. That Departments be invited to scrutinize the methods of instruction now employed in courses offered under the Graduate Faculties, with a view to determining whether those methods are the ones best calculated to encourage genuine scholarship and stimulate productive research on the part of gifted students; and in this connection to consider whether both the development of the student and the progress of the professor's researches cannot be advanced by an earlier and greater participation by the student in the research work of the professor.

I have touched thus fully upon a general condition because I believe it affects the situation of geography to a peculiar degree. In a subject of such vast scope as ours there is an unusually strong temptation to multiply indefinitely courses of instruction. First, there are the various branches of geography which the systematic and logically-minded department head wants to see represented on his program. A university offering implies courses of advanced grade; but in preparation for these there must be more elementary courses. Then come the claims of regional geography; and so long as a single continent remains uncared for, the gaping void plagues the logical mind. The effort is to secure, within the necessary limits imposed by financial conditions, a well-rounded program of instruction; and in this effort expedients of doubtful value are frequently employed. When specialists in a given branch of geography can not be secured, the most available member of the staff is asked to "give a course" in this subject. Men really acquainted with certain continents are not easy to find; so we have the spectacle of young instructors or mature professors offering in the high precincts of the university courses composed wholly of second-hand information, about regions no part of which they have ever seen. A situation bad in many university subjects, is peculiarly bad in geography.

Let us not mistake the remedy. It is vain to look to more and better instruction for any fundamental improvement in the situation of geography. The multiplication of courses of instruction overburdens the teacher and cuts down to a pitiful minimum his time for creative work. On the other hand, it seems neither feasible nor desirable to check the flow into the university of the large number of students actuated by social rather than by scholarly motives. They may advantageously be welcomed to the lecture courses offered by university professors, provided these professors

are not asked to waste valuable time in trying to extract results from those who lack either the capacity or the inclination for scholarly work. There are ways of handling separately, even in the same class, those who come to work, and those who come, as Dean Woodbridge has expressed it, merely to breathe a while longer the good air found in the groves of the academy. Geography as well as other subjects would lose by excluding these last from the university; but it must lose far more heavily so long as it adapts the university program to the needs of this large but less important group, rather than to the needs of the small but vitally significant group fired with scholarly and scientific ambition. So far as our subject is concerned, this particular situation will radically be improved only when our departments of geography cut their course offerings to a reasonable minimum; require no professorial supervision of, or responsibility for, those attending general courses for cultural purposes only; restrict admission to research and seminar courses to those who have the time, taste and capacity for scholarly work; and, most important of all, insist that professors shall expend half or more of their working time in advanced research. Let us remember that no university ever achieves lasting fame for the number, or even the quality, of its courses of instruction. One man who makes great advances in some branch of geography will do more for the honor of his institution and for the prestige of his science than will a whole regiment of mere givers of courses. More research and less instruction is the crying need of geography.¹⁸

Research vs. Compilation.—When I use the word “research” I specifically exclude all studies which do not explore new fields of thought or add new matter to the geographic store. It is undoubtedly true that geographers have need for much compilation in the form of textbooks and other treatises presenting little that is original aside from style, point of view, or method of treatment. One prefers to have such works written by able rather than by mediocre men, and therefore recognizes the valuable service rendered when a master geographer makes such a work available for his colleagues.

¹⁸ Since I have earlier cited Edward C. Pickering on the unusually high prestige of astronomy as a science, it may be well to quote here his explanation of this fact: “Astronomy is almost the only science having institutions devoted to research, and in which a large part of the time and energy is not expended in teaching. Of the six American members, five have occupied positions in which no teaching was required, but their entire time was supposed to be devoted to original investigation.” From “Foreign Associates of National Societies,” *Pop. Sci. Monthly*, Vol. 73, 1908, pp. 372-379. See p. 379.

But it would be a serious mistake to confuse such work with research, and particularly unfortunate to see in it the chief end of geographic endeavor. The ablest investigator, in geography as in other sciences, must occasionally halt his researches to do a piece of work which will help to codify the laws of his subject, clear away harmful misconceptions, or provide the groundwork for further researches by others. This sacrifice he makes for the common good; but if he is as wise as able, he does not become enamoured of the lesser task.

Special temptations beset the young instructor in geography. Scarcely has he secured his doctor's degree and accepted a position in college or university, before he feels the urge to write a geographic text. If he is capable, publishers are soon upon his trail. A successful book offers large monetary returns in a short space of time. The young man with a growing family compares this prospect with that held out to him by most universities, which after long years will reward the scholarship of a master with the salary of a moron. He takes the obvious course, and before he has done anything to enlarge the boundaries of geographic knowledge his energies are consumed in writing about what others have accomplished. One successful book begets another, and eager publishers give him no peace. A good writer of texts has robbed geography of an able investigator, and so far as he is concerned the science remains just where he found it.

Primary Importance of Research.—If I have placed special emphasis upon the prime importance of research, it is because among geographers there does not appear to be full agreement that creative work in a science determines the vigor of its growth. Only a very few take the position that the geographer need not in any degree be an original investigator, but may content himself with correlating and interpreting results secured through the researches of others. More are of the opinion that the geographer should do some research as a mental discipline, to sharpen his critical judgment of the work of others, or to solve some particular problem in an emergency; but they seem to hold that interpretation of results obtained by researches in other fields is the chief function of the geographer. I cannot escape the feeling that this still leaves the geographer too largely in the lowly estate of a dealer in second-hand goods. If all we have to offer the world is a new combination of old facts, a synthetic description of things already separately observed, a review of known data from a novel point of

view, then we must be content to accept a low valuation of our labors.

I do not believe the majority of us will be so content. I note with satisfaction the opinion of a distinguished leader of the French school of geography who insists that there can be no regional geography of value which is not based on profound scientific research. Another French authority writes: "In my opinion it is almost impossible for a geographer to be acquainted with all the sciences [fields of knowledge?] in such manner as to make a perfect work of correlation; it would be preferable for him to be a specialist, and seek to do creative work in a single branch of geography."

The trend of British opinion is especially significant. One British geographer writes: "The creed of a geographer must be that he works in a field which has fairly definitely determined boundaries, that he is scientifically familiar with the whole of the field in its essence and with its boundaries, and that in part of it he pursues original investigation as a specialist." Another observes: "There is too great a tendency among many of our geographers to write nothing but schoolbooks," and he recommends "publishing more research" as the best means of raising the prestige of the subject. A third expresses the opinion that "the humbler position of geographers amongst their scientific colleagues is due in large measure to the small output of original work of a distinctively geographical kind," and he points out that if university salaries be raised "it will no longer be necessary, as it has been hitherto, for these teachers to eke out their living by writing ephemeral schoolbooks or burdening themselves with routine examination work. The better amongst them will devote their time to study, travel, and research." Yet another states: "A great deal of the so-called research in geography done in this country is merely careful compilation of data, descriptive work such as can be well and usefully done by second class men," and he insists that geography will not attract real ability nor become a full-sized subject until it is taken outside the lecture room and library, and the geographer himself becomes a first-hand seeker after facts.

IX. SOME POINTS OF VIEW

In the light of this analysis of conditions and causes, what shall we say of the geographic prospect? I presume different temperaments will view it differently. The pessimist, who fails to note the great advances made by geography in many countries in the space

of a few decades, and who considers only the darker side of the shield pictured here, will have ample ground for his pessimism. The optimist may view our troubles lightly, decry the efforts of those who seek to discover causes and apply remedies, and proclaim his faith that the ills of geography will in time cure themselves. Between these extreme views are two others which seem to me more logical.

The first recognizes frankly that geography is not a science in the sense that geology and botany are sciences. According to this view geography makes use of scientific methods, and has scientific elements in it; but it possesses large areas not reducible to scientific terms. Hence it can never expect to enjoy the high prestige of the sciences, and should not pretend to a place of equality among them. On the other hand, it possesses advantages which the sciences do not share. As a subject of general educational value it stands unrivalled. To the obscure citizen it offers the best preparation for an intelligent understanding of world affairs, to the eminent statesman an invaluable equipment for his high labors. It takes an honorable place along with history, economics, and sociology; and for its purposes synthesis and description, correlation and interpretation meet every real need. In the realms of scientific analysis, prediction and discovery geography cannot rank high; but in the practical affairs of this world it holds a place to which some of the sciences cannot aspire. This seems to me a logical view, and it is one which has brought satisfaction to more than one geographer.

The other view is less immediately comforting, yet distinctly more hopeful. It refuses to surrender geography's claim to a place of equality among the sciences until the scientific possibilities of the subject are more thoroughly explored than they have as yet been. It frankly admits the present low standing of geography, and clearly sees the grave ills which adequately explain the unhealthy condition of the subject. But it holds those ills to be remediable. It distrusts the doctrine of *laissez faire*, and believes remedies must be actively sought and energetically applied by those who would see their subject realize its fullest possibilities. When those possibilities are realized, it hopes to see geography doubly respected for the high scientific character of its methods and for the unequalled practical value of its subject matter.

Obviously all who regard geography from either of these two points of view may work together harmoniously for the improvement of the subject. But I think most may be expected of those unsatisfied spirits who hold the view last described. That they

see our difficulties more clearly and understand them better than do outside critics of geography, is in itself a hopeful sign. When their knowledge is translated into appropriate action, geography will in my opinion enter a new and higher stage of its development.

PART III. CURES

X. LIMITATION OF SCOPE OF SUBJECT

Our discussion of the causes of geography's low standing points the way to several specific steps which geographers must take to remove those formidable obstacles now hampering the progress of the science. Most important, and most difficult to achieve, is limitation of the scope, and agreement on the essence, of the subject. Presumably this will be accomplished slowly and with much travail. But undoubtedly progress will be accelerated if each professional geographer comes to realize the necessity (apparently already recognized by the majority) of effecting some restriction of the vast field now claimed by geography, and gives thoughtful consideration to the best means of accomplishing this end. If he then tentatively accepts for himself a philosophy of the subject which gives it reasonable scope and unity, applies this philosophy in his own researches, and presents the results for the analysis and criticism of his geographical colleagues, friendly discussion will inevitably develop the weaknesses of a poor philosophy or the strength of a good one. Important results produced by able research in a field properly restricted and intensively explored will prove weighty arguments in favor of such restriction, and will automatically focus opinion more and more clearly toward a common conception of the true nature and proper scope of our subject.

If I have spoken as though geographic knowledge is something to be artificially bounded by human fiat, something which man can squeeze into lesser limits and at will fence off from other realms of knowledge, it is merely because I have adopted a language current in our fraternity. I assume, however, that when we talk of scope and limits, we all realize that the real problem is simply this: Shall the term geography be used as a gigantic blanket to spread over an endless variety of useful knowledge relating to all things visible on the surface of the earth at the present time; and shall geographers be encouraged to roam as widely as possible over an illimitable surface, lightly scratching the ground at countless places, but for the most part gathering, classifying and describing treasures unearthed by other workers in many fields? Or, on the other

hand, shall the term geography be restricted to a limited field of knowledge having certain well defined characters, and geographers be encouraged to concentrate their energies in delving deeply in this field for treasures hitherto undiscovered.

LIMITATION ILLUSTRATED.—Let me illustrate what I understand by the term limitation as we are employing it. I have no desire to attempt a definition of geography at this time, but since it is easier to think in concrete terms I will adopt, for present purposes, a conception of the subject which seems to me to have certain merits. According to this conception, geography concerns itself with the distribution of organic phenomena as affected by physical environment. In such a philosophy geomorphology, meteorology, and physical oceanography would be recognized as distinct and independent sciences, which might be cultivated by specialists having no interest in the effects of physical phenomena upon man and other organisms. In the same way the autonomy of botany, zoology, anthropology, history and economics would be fully recognized. Under these conditions much matter concerning industrial development, transportation and trade relations, now labelled geography, would be excluded from the science on the ground that this matter either was in substance pure economics, or was so indirectly and remotely related to geography as to merit little attention by specialists concerned primarily with the distribution of organic phenomena as affected by physical conditions.

The mere distribution of folded mountains, of rainfall, or of ocean temperatures would not be regarded as geography, since this philosophy recognizes that the materials of all sciences are distributed, and refuses to admit the geographic quality of so vague and variable a thing as distribution *per se*. The distribution of manufacturing plants in a city when determined by economic causes, the directions of urban growth when controlled by human factors, and similar matter often treated under the caption "geography," would be excluded on the ground that such distribution is not primarily affected by physical environment. The fact that trees grow upward, that the bones of the human body are nicely adjusted to a vertical pull of gravity, and a host of other interesting relationships between the organic and inorganic world, by some included in the geographic field, would be excluded by a philosophy which recognizes that all organic forms have various relations with the physical world in which they live, believes that to extend the term geography to cover all these is to rob it of any real signifi-

cance, and therefore limits its scope to phenomena of distribution.

To this three-fold limitation,—first to problems of distribution, secondly to the distribution of organic phenomena, and thirdly to such distributions of organic phenomena as are materially affected by physical environment—a wise philosophy might for practical reasons add a fourth by excluding from consideration obvious and trivial things. Academic discussions which merely formulate in geographic terms common facts which every layman knows, or facts so trivial as to be hardly worth the knowing, represent a waste of energy badly needed in more important corners of the geographic field, and lower rather than elevate the standing of the subject.

As thus conceived and circumscribed, geography still presents a vast field for scholarly study and research. The distribution of population as affected by mountains of different types; the distribution of military effectives (strategy and tactics) as influenced by topography; the distribution of various plants as affected by temperature, rainfall, soil, and slope; the distribution of food fishes as affected by temperature, salinity, depth, and seabottom conditions; the distribution of manufacturing industries as affected by water power, natural harbors, mineral deposits and other physical factors; the distribution of urban and rural populations as affected by topography, position of groundwater or, wind direction; the distribution of animals as affected by temperature, altitude or rainfall; all these are topics evidently within the purview of geography as we have tentatively conceived it. Surely the field remains large enough for the most ambitious. No one man could compass such a range of subject matter, except in a purely superficial way. Even when drastically curtailed, the scope of geography remains so broad that the complete geographer, in the words of a British colleague, would have to be a super-man.

Lest I be misunderstood, and attention diverted from a principle to a purely theoretical illustration, let me emphasize the fact that I am not now advocating that geography should be limited in the manner just indicated. I do not pretend that the conception of geography outlined above is necessarily the best that can be formulated. Some will prefer to limit the range of the subject still further by making it focus on man and his activities, and by treating plants and animals in their normal habitats merely as part of man's natural environment. Others may adopt yet different conceptions of the subject. My aim has been merely to illustrate the *kind* of limitation that seems both possible and logical, and to show

that were geographers to concentrate their energies upon the field thus limited they would find ample scope for their abilities.

XI. IMPROVEMENT OF CONDITIONS FOR RESEARCH

A second step of vital importance, if we would raise the standing of geography, is to improve conditions for geographic research. To this end efforts may well be made in several directions. Many professors of geography are themselves responsible for undue multiplication of formal courses of instruction, and have it within their power to reduce their teaching schedule and to increase the time they give to creative work. Where pressure in the opposite sense is exerted by university officials, much can be accomplished by urging upon those officials the superior value to the university of productive scholarship, and by showing the steps taken at other universities to reduce formal instruction and promote original investigations. It must frankly be recognized that steps in this direction will be laborious steps uphill. Gravity pulls the other way; and the current of university activities, under pressure of modern social conditions, is setting strongly toward the plain of mass instruction and away from the higher levels of individual research. Yet the argument that the prime function of the university (as distinguished from the teaching function of the college and secondary schools), is to promote research and advance knowledge, is unanswerable. Patience and tact may be needed in pressing the argument; but both the traditions of learning and the logic of the situation are on the side of those who would give research first place in the university, cultural instruction first place in the college, and technical training first place in the professional school.

Public discussion of this question by professional geographers might aid in forming a healthy public opinion within our fraternity which would discourage undue expenditure of energy on teaching and textbook writing to the exclusion of productive research. It might thus come to be "bad form" to overbalance research with instruction; and perhaps also for a man, especially a young man, to publish textbooks before he has earned his title to a position of authority in the science by substantial contributions of an original character.

Reviewers of geographic publications can aid in the same direction by making a clear distinction between (a) works which are merely useful compilations, descriptions and formulations of mat-

ter already the property of the science, and (b) works which add new terrain to the field of geography as the result of high grade intellectual exploration. Our profession should realize that works of the former type often bring their own reward, while those of the latter type usually represent personal sacrifice and genuine devotion to an intellectual ideal. Let our fullest measure of approval and our highest rewards be reserved for those who spend much to conquer for us a bit of new ground.

Thus far I have said nothing concerning direct financial support of geographic research. Some of our European colleagues have very properly stressed the fact that research in our subject is peculiarly dependent upon funds for travel over the terrain upon which the data of geographic studies must be collected. It is therefore but proper that we impress upon university authorities the special needs of our subject, if geographic work of real university grade is to be accomplished. If university departments of geography would take the initiative along the lines of the first resolution quoted on page 214, and would make annual budgets in which research is provided for as substantially as are instruction and administration, a great improvement in geographic science would soon become evident. Some universities maintain, apart from departmental budgets and other usual charges, a research fund expended in supporting the private investigations of individual professors by cash grants for travel, for equipment, and for personal assistants to aid him in his work. Other universities might be encouraged to follow this example, if the facts were put effectively before them. Geographical societies might increase their aid of individual research projects. For success in these directions, however, the geographer must first convince the proper authorities that he has not only the capacity to prosecute research, but in addition a project for investigation eminently worthy of substantial support. This brings us to a third step essential to the improvement of geography.

XII. PROPER ORIENTATION OF RESEARCH

The third step toward raising the standing of our science concerns the direction in which geographic researches should be oriented. If it be possible that in synthetic, descriptive, and interpretive geography we have not yet found the highest aspects of our subject, and that there exists within the geographic field room for more profound analysis, more extended prediction and more important discovery than we have yet realized, let us ener-

getically explore these possibilities. To this end we must first recognize that preparation for the two types of geographic endeavor are not necessarily the same. Synthetic, descriptive, and interpretive work demands above all else *breadth* of knowledge; for in such work, even when his own field is limited as above suggested, the geographer must handle intelligently a great variety of phenomena representing many related fields of learning. He must know something of the independent sciences of geomorphology, meteorology and physical oceanography, in order to deal understandingly with elements of the physical environment which enter into his picture. He must know something of botany and zoology, of anthropology and sociology, of history and economics, if his picture is to be even reasonably complete. As has previously been pointed out, herein lies a real peril for this type of geography. No man can know all these fields thoroughly; and superficial work inevitably involves errors and breeds lack of respect. We should carefully consider whether this type of geography, however interesting and useful it may be, is not by its very nature foreordained to a secondary place in the world's esteem.

In analytical studies *depth* rather than breadth of knowledge is the prime requisite. A broad, superficial acquaintance with the general field of geography is highly desirable for every geographer, in order that he may appreciate at full value the work of his colleagues, and see more clearly the precise significance of his own special studies. But research in any subject demands for its successful accomplishment a profound and intimate knowledge of the special field of investigation. This implies concentration of effort. If the geographer has adopted that philosophy of his subject set forth on an earlier page, his proper course of action is clearly indicated. Geography as there conceived has unity of purpose, for it seeks to discover and understand a single great class of distributional facts. But its subject matter is invariably dual. It deals with organic phenomena on the one hand, and with inorganic environment on the other. This means that any investigator who would do creative work in the subject must make himself absolute master of at least one group of physical phenomena and one group of organic phenomena. Then, and only then, will he be properly fitted to prosecute worth while researches on the distribution of the latter as affected by the former. If the geographer adopts some other philosophy of his subject, then he must prepare himself with equal thoroughness in the fields he proposes to explore. By the

very nature of geography, however defined, this will most frequently involve preparation in at least two fields.

The importance of this dual preparation cannot be over-emphasized. Geography has suffered much in prestige from the man thoroughly trained in physical geography who has attempted to show the effects of environment upon organic phenomena when he possessed nothing more than a superficial knowledge of the organic side of his problem. It has suffered equally from the trained biologist, historian or economist who has attempted the same task with only a smattering of physical geography at his command. Both perpetrate egregious errors in the fields of their ignorance, and lower the respect in which their work is held by competent judges. A geographer may select as his subject of investigation the effect of past climatic changes upon human migrations. In this case he may legitimately have only superficial knowledge of geomorphology, oceanography, economics and other fields which are involved in some geographic studies; but he must become a specialist in the two fields of climatology and history, know the general range of subject matter and methods of research in both, and be fully competent to do original work of high quality in both. It is dangerous for any man to attempt scientific research on the relations of two things one of which he does not thoroughly understand.

In this connection we may do well to emphasize one outstanding characteristic of geographical development in Europe. Geography has attained its highest level of prestige in those countries where its study has been solidly based on a substantial knowledge of the earth sciences. The geographic renaissance in France dates from the time when Vidal de La Blache sent his disciples into the Faculty of Sciences to acquire that scientific training which was to carry French geography to its present high position. "Among the selected group to whom his teaching was addressed he soon found minds flexible enough and wills firm enough to decide to make the necessary effort, even after having completed the normal requirement of studies, to acquire the knowledge of the natural sciences on which studies in modern geography must be based. The pupils of Vidal de La Blache could be seen in the lecture rooms of the *Faculté de Sciences* and, without losing the advantages of their literary and historical training, trying to acquire the training of naturalists. Only through this circumstance can be explained the sureness of touch that has guided the regional studies produced

during the last thirty years in the French universities."¹⁸ In Germany, where the physical side of geography has received an extraordinary amount of attention, the subject rapidly gained a place in the universities hardly equalled elsewhere, while its scientific prestige is perhaps higher than in any other country. In Sweden, where modern geography has made a remarkable advance in recent years and occupies a relatively high place in the esteem of public and learned circles alike, the subject has been closely linked with geomorphology, meteorology and physical oceanography; and even those geographers now actively engaged in advancing the human aspects of the subject have usually been well trained on its physical side. The American renaissance in the subject began when a great geomorphologist introduced into geography the rigorous scientific methods acquired through geological training and experience.

In some of these cases geography has moved too far into the domains of the purely physical sciences, or has claimed as its own part of these domains. Either procedure is in my opinion fraught with danger for our subject; but it is still more dangerous to imagine that modern geography can be isolated from the earth sciences. The whole history of the subject proclaims eloquently that there can be no truly scientific development of geography, capable of commanding the respect of scientific men, which is not based on a thorough training in one or more of those physical sciences which lie at the root of all earth studies. The geographer who slights the physiographic half of his training ignores both the logic of the situation and the teachings of experience. Belgian geographers, appreciating this truth, decided to place the administration of their doctorate of geography under the Faculty of Sciences, and to require of every candidate a broad training in science, including, as we have seen, work in mathematics, experimental physics, general chemistry, geology and physiography. Writing of the future of geography in France a French colleague says: "In my opinion the question of the future of geography will be difficult to solve so long as we do not give to all our youth in the *lycées* a simple but solid and rigorous scientific training; and so long as we fail to organize a university program without distinction of Faculties, in such manner that those students destined to become geographers can secure the training necessary for them, in the sciences as well as in letters."

¹⁸ Emmanuel de Martonne, *Geography in France*, Amer. Geogr. Soc., Research Series No. 4a, 70 pp., 1924. See pp. 20-21.

XIII. THE GEOGRAPHIC PROSPECT

Once the geographer is equipped with a general knowledge of his whole field, and a profound knowledge of both the physical and organic aspects of his special subject of research, a most attractive prospect spreads before him. It is not for me to specify the discoveries which will be made by the geographer thus trained. These lie hidden in the secret chambers of the future. But I may confess the faith of one whose chief labors belong in the field of geomorphology, but whose modest ventures upon geographic ground give him confidence that brilliant achievements will crown the researches of those men willing to make the great but necessary sacrifices required by the double preparation essential for effective geographic research.

I cannot doubt that many important facts of distribution remain to be discovered through the capable labors of such men. The genetic relationship of these facts to elements of the physical environment will be determined by rigid scientific analysis, in which comparison of the areas of distribution of organic and inorganic elements of various kinds will play a significant rôle. Many obvious interpretations will be discarded and new ones discovered; for apparent relationships are known frequently to be deceptive, and true causes are often most obscure. In general scientific interest many problems of distribution will take high rank. The field of zoogeography, now largely neglected by zoologists who devote their labors chiefly to genetics and other non-geographic aspects of their science, beckons invitingly to men well trained on both the physical and biological sides of the subject. From their analytical studies of the distribution of land animals might come discoveries of the first magnitude, well calculated to throw needed light on moot questions of ancient land bridges and lost continents, and doubtless also on fundamental questions of evolution. To men who master the modern science of physical oceanography, and at the same time train themselves thoroughly in marine biology, are presented problems in the distribution of ocean life which can scarcely be excelled for scientific interest and practical importance. An able colleague in zoology has expressed his conviction that zoogeography offers to the properly trained man an unusually attractive field of research, now little cultivated. He is supported by an eminent geologist and palaeontologist who writes: "I am very strongly of the opinion that studies in the [present] distribution of animals and plants may lead to important geographical discoveries."

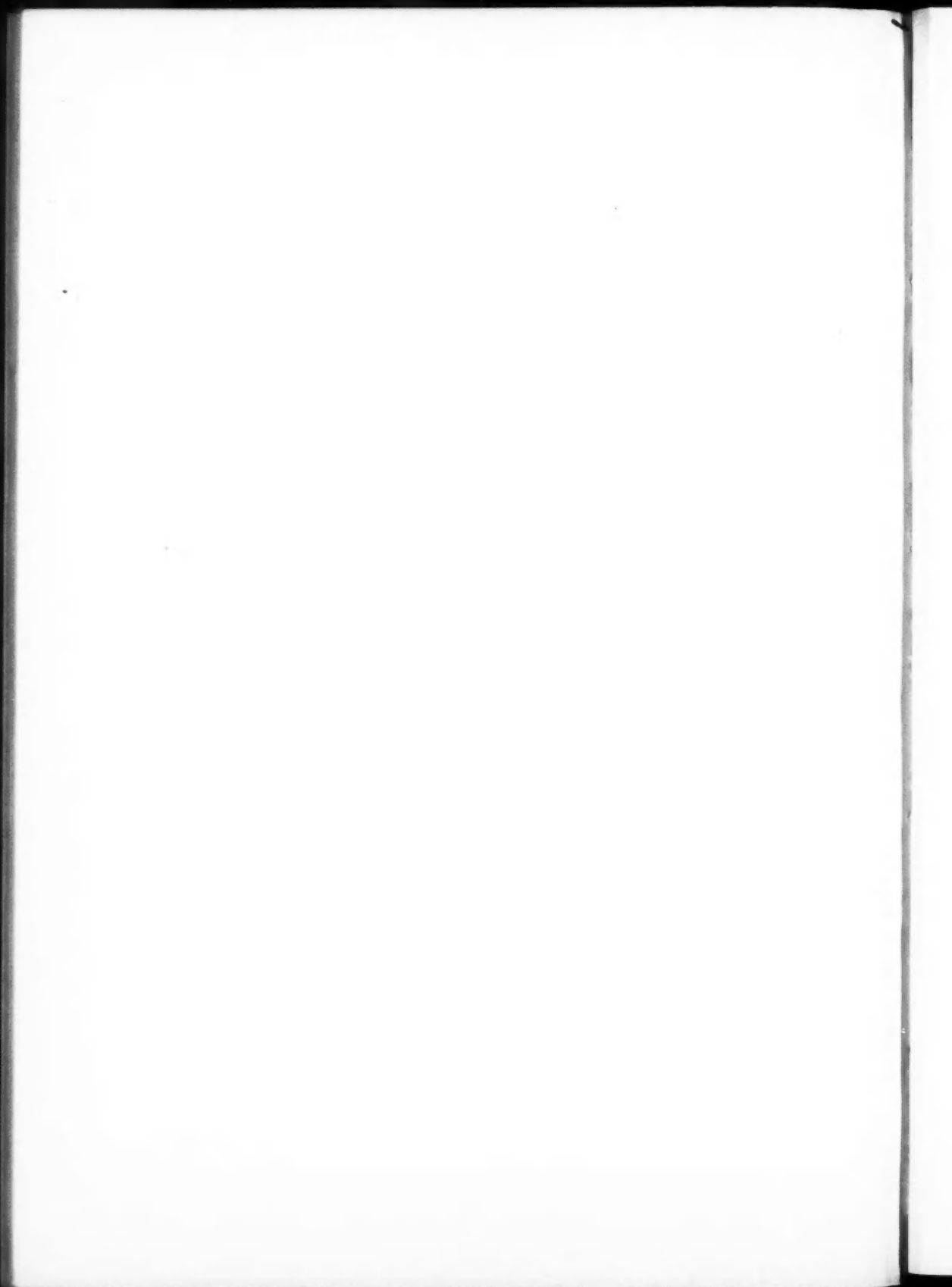
More work is being done in plant than in animal geography; but, according to some of my botanical colleagues, often by men inadequately trained on the physical side of their subject. It is reasonable to believe that the future of this field holds important discoveries for men who are at the same time competent botanists and competent physiographers. Nor is it difficult to conceive that the practical value of such discoveries in promoting the welfare of mankind might be incalculably great. The history of malaria, yellow fever, and certain other maladies suggests that there may be vital problems in the distribution of disease which the properly trained geographer better than any other can solve, thereby making himself a distinguished benefactor of the human race.

In the field of human geography the opportunities are varied and enticing. No phase of geographical science has suffered more from loose thinking, false generalizations, and unlucky guesswork, or more urgently needs the rigid application of careful analytical methods at the hands of well trained investigators. That man's bodily vigor, his intellectual activities, and his spiritual aspirations are materially affected by his physical environment, there is every reason to believe. Worth while researches in distributional problems in these fields present especially delicate and complex questions, for many non-geographic factors enter to confuse and complicate. But enough work has already been done to justify one's confidence that analytical studies prosecuted by careful men fully trained and experienced in every phase of the subject they assume to handle, will bring valuable results.

In political geography and in economic geography there undoubtedly lie rich fields for research by men combining the qualifications of the trained physiographer with those of the historian and student of political science on the one hand, and the economist on the other. Such research will not be directed to the mere recording of successive boundary changes, nor to the mere mapping of political phenomena; neither will it concern itself with the vast quantity of purely economic studies of production, manufacture, transportation, trade relations and industrial development now masquerading in the garments of geography. It will rather confine itself to those phenomena of history, political science and economics which have direct and vital genetic connection with physical environment, and will seek by intensive analytical study to discover relations either not hitherto known or not properly appreciated. The broad training of the well equipped man will enable him to separate and evaluate those elements of his problem which

are purely social, psychological, or economic; while his geographic sense will prevent him from losing himself in the maze of this interesting but non-geographic matter, and will assure concentrated research on those problems which really lie within his field. That such concentrated study by thoroughly trained men will be most fruitful in discoveries of high scientific and practical importance, one cannot doubt.

It is to this prospect that we may justly turn with every confidence if we possess the wisdom to shape our future course in those directions which promise richest rewards for geographic research, and if we have the courage to make those sacrifices through which alone such rewards may be obtained. Rightly conceived, geography is one of the most difficult and exacting of sciences. Only the ablest men should be encouraged to enter a field in which initial preparation must be doubly thorough, and in which subsequent labors must be conducted with exceptional skill and judgment. To the weakling the subject offers only routine rewards and mediocre prestige. But to the strong man it holds out promise of brilliant achievements in a comparatively new field of investigation, where the hardships of scientific exploration will be more than repaid by the solid satisfactions of discovery.



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